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CRATER LIKE CAVITIES IN OPTIC DISC.

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This rare anomaly of the optic disc was found in a woman of 77, who came for poor vision. The appearance is shown in color Plate 2. Cases previously reported and the supposed origin of the defect are discussed.

According to the Encyclopedia of Ophthalmology crater like cavities in the optic nervehead are rarely reported, therefore the following case may be of interest:

Mrs. H. H., aged 77 years, presented herself at the Knapp Eye Clinic on February 24, 1925, and gave a history of having had poor vision for at least the past fifteen years. She had changed her glasses about two and one-half years ago. Vision, manifest R. 20/50—1 c. ax. $90^{\circ}=20/24$; L. 5/200 not improved. R. color fields practically normal. Tension, Schiötz, R. 15. L. 12. Fundus. R. crater like holes, in temporal third of optic disc. Color of fundus nasally was light yellowish red, with sclerochoroiditis posterior and myopic astigmatism. L. crater like hole, oval in shape, longest diameter being horizontally, in a superior third of optic disc. Macular choroiditis, floating opacities in the vitreous and immature cataract; ocular arteriosclerosis both; also has a dilated heart.

The drawing in color of the right fundus, by Dr. Fineberg of Columbia University, will show in the right eye that the crater was oval in shape, the greatest diameter being vertical, and that it was located in the temporal side of the disc. The sides of the crater were very abrupt, especially the temporal side, and it required a -9.D. to see the floor of the crater, where two small additional pigmented holes could be further seen. In the left disc the depth of the crater was between 9 and

10 D. but on account of the opacities in the lens and vitreous the details were blurred and indistinct. The reflex from the floor of the large crater like hole was of a slatey blue color, while from the nasal part of the disc a dense white thin veil of (apparently) connective tissue, extended from the edge of the crater to the nasal edge of the disc. This anomaly occurs twice as often in females as in males. The holes are supposed never to occur in the disc above the horizontal meridian, this case being an exception to the rule. These holes are not to be confused with those described by Schnabel and Fleischer, which are seen in the optic nerve in some cases as a result of glaucoma.

Reiss states, "the appearance of these crater like holes is not so much that of a hole, opening anteriorly, as of a cystic defect in the mass of nerve tissue, behind the surface of the papilla." Most writers seem to think that the anomaly is an example of incomplete coloboma of the optic disc.

These congenital anomalies, according to Collins and Mayou, are supposed to be due to atypical development of the neural portion of the secondary optic vesicle. They state that the condition differs from a coloboma of the disc. It is rarely situated in the line of the ocular cleft, and two holes may be present in different parts of the same disc. It consists of a pit situated in the papilla near its margin varying in size from $1/8$ to $1/3$ of the diameter

of the disc. In depth it may be an amount which is just appreciable by the observation of a parallax ophthalmoscopically, or as much as 8 to 9 mm. The walls and floor of the pit are usually pigmented, but to a different degree in different cases. According to G. Coats microscopic examination of specimens in which this condition was present, shows a deep pocket in the nerve at its border, which passes backwards separating the lamina cribrosa from the sclera promontory. The pit is entirely in the nerve, it is lined by the pigment epithelium and filled with altered retinal tissue. Ophthalmoscopically the pigmented floor

of the depression is seen thru the retinal tissue which is transparent. Another observer thinks that in these cases the neural portions of the secondary optic vesicle, instead of forming neuroglia for the support of the nerve fibers, develops atypically into tissue like that normally met with in the eye ball. A layer of pigment epithelium, corresponding to the outer layer of the secondary optic vesicle forms on the inner surface of the pial sheath, and aberrant retinal tissues, corresponding to the inner layer of the secondary optic vesicle, forms deeper in the nerve.

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GOLD AND SILVER IMPREGNATION OF CORNEA FOR COSMETIC PURPOSES.

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This method of coloring the cornea instead of tattooing it was suggested by P. Knapp, who used solutions of gold chlorid applied to the corneal scar denuded of its epithelium. This method and a similar use of solutions of silver nitrate have been studied by experiment and clinically in the Department of Ophthalmology, University of Nebraska Medical College. Four cases are reported.

Tattooing corneal scars by the usual method with India ink and a needle has proved, in many cases, a disappointing procedure. A scar which appeared quite black immediately after the operation, will often show the next day only a few dark areas, many of the ink particles being washed out from their too superficial puncture holes. Then the procedure must be repeated; and since the after effects often include a great deal of pain, one or more repetitions are seldom welcomed by the patient. The procedure is also not without danger, especially where iris is included in the scar, a number of cases of severe iritis and even panophthalmitis having been reported following tattooing.

In 1925, P. Knapp¹ of Basel reported a case which he had treated according to a much simpler method, which he had first tried on rabbits. He denuded the scar of epithelium and applied a cotton applicator soaked in a 1% solution of gold chloride for two or three minutes. In about fifteen

minutes, during which reduction of the gold salt occurred, the scar turned dark, the color varying from dark brown to black. The process could be hastened by instilling adrenalin immediately afterwards. Sections of rabbits' eyes treated in this manner showed a deposit of fine dark particles in and between the superficial corneal lamellae. The epithelium was completely regenerated in four days, and no signs of inflammation were to be seen at this time. The color remained the same during eight months' observation of his animals.

His one human case showed a large adherent vascular leucoma, and in this a good cosmetic result was obtained. Only a 1% solution was used in this case, but 2 to 5% solutions were tolerated by rabbits with very little reaction. His solutions were made slightly alkaline with Na HCO_3 . Other metal salts, platinum chloride, gold and silver cyanide, and cobalt chloride were tried on animals but produced no staining. Potassium ferrocyanide and

iron perchloride produced a blue color which was only temporary. Later in the year, Knapp communicated results obtained by Blaskovics and Huber in tattooing the clear cornea over a coloboma for optical purposes. In both their cases vision was appreciably improved. Negative results, obtained by Brückner and Blaskovics in leucomata, are explained by failure of the gold to penetrate as deeply in such dense connective tissue as in the normal cornea. Knapp demonstrated this microscopically, in the eye of a rabbit with a leucoma. He suggests applying the solution for five minutes in dense leucomata, or using stronger solutions, up to 5%. Where adrenalin was used a more rapid but not so deep staining appeared, and sections showed that the particles were located much more superficially where adrenalin was used, the gold evidently being reduced too quickly.

In a third report² in 1926, he emphasized the necessity of using Na HCO_3 in neutralizing the solution to produce a black color, as other alkalis influence the dissociation of the gold salt (really $\text{Au Cl}_3 \text{ HCl}$) in different ways. Acid solutions give the black color, and only strong solutions need be neutralized and should be left faintly acid to litmus. The solutions need not be sterilized, as a 1% solution kills all the ordinary bacteria. He finds that 1% tannin is the best reducing agent to use afterwards. Photographs are given of a good cosmetic result in a case of congenital total leucoma, in which he used a horn ring to outline the corneal margin and stained everything inside the ring with 5% gold chloride. After two and one-half months the original color had faded slightly, but a brown of about the same color as the iris remained.

Pretori³ saw three cases of adherent leucoma treated in the Tübingen clinic with 1% gold chloride for slightly over one minute with good cosmetic results in two and a fair result in the other, the only one where adrenalin was used. Geis⁴ obtained a good result in a case of total leucoma. A first attempt, in which KHO was used to

neutralize the solution, was only partly successful, but when Na HCO_3 was used, the 3% gold chloride solution being applied for five minutes, a good dark brown color was obtained (observed for 6 weeks).

Spanyol⁵ has reported seven cases treated by Knapp's method. Two per cent gold chloride neutralized by Na OH was applied for four minutes. In one case of adherent leucoma the color was the same after three and one-half months and in another after eleven months. One scar which extended over the pupil and part of the iris was stained first over the iris for one minute with a two percent solution and a brown color obtained. Later the pupillary area was stained black by applying the same solution for four minutes. An optical effect was noted in this case, vision improving from 5/30 to 5/15. Another similar scar was treated in one sitting, the epithelium being first removed over the iris and the application made for two minutes, whereupon the pupillary area was similarly treated for four minutes.

Czapody⁶ reports a good result in a dense scar with iris inclusion. Vision increased from counting fingers at one meter to 1/10. Kreiker⁷ used a 5% solution on a degenerated scar, with good results. Later⁸ he attempted to color the whole bulbar conjunctiva of an albino by this method, but the reaction was too severe. Jilek⁹ obtained a darker color when the superficial stroma was shaved off with the epithelium, and could graduate his color from gray to black. Fejer¹⁰ reports good results in seven cases. Licsko¹¹ advises scarification deeper than the epithelium. Bartels¹² obtained a good result in an adherent scar. In a very vascular scar two attempts, with 1 and 3% solutions, gave no results; but after dividing the vessels supplying the scar, some staining was obtained with 3% solution. Sallman¹³ reports one good result. In Aust's case¹⁴ iritis was produced by a four minute application, but the result was good. The iris under the scar was stained, apparently by some of the salt which had entered the anterior chamber. Hub-

ner¹⁵ obtained negative results in two cases of dense leucoma, and a good result in a third case. Blaskovics¹⁵ has seen good optical effects obtained by the method. In this country we have seen only one brief reference to the method in the description of a case by Ellett¹⁶ who reported a very good result.

Among the other methods of staining corneal scars, Karelus¹⁷ has recommended a "subepithelial tattooing." He outlines the scar with a knife and undermines all of the area except a small stalk or hinge. The flap so formed is turned up, the cornea under it tattooed with India ink, which is allowed to dry, and the flap is replaced. A similar method is used by Rochon-Duvigneaud, the area being trephined to about one-fourth of the depth of the cornea, the flap removed entirely and replaced over the India ink. This procedure was apparently first described by Hesse¹⁸ who also sometimes left the flap hinged at one side as advised by Karelus. Rothschild¹⁹ demonstrated in animals the possibility of injecting the ink directly into the scar tissue, using enough pressure to force it out to cover the required area. We have tried this experimentally but found that with even the finest suspension, most of the particles are held back by the corneal tissue, so that only the area just around the puncture hole retains any black.

A recent report by Holth¹⁹ gives the exact details of his methods of tattooing, using India ink and other pigments, for the production of different colors. His numerous photographs show what good cosmetic results may be obtained by one who has had sufficient experience to become an artist at this sort of work. He mentions having tried Knapp's method with a practically negative result, but believes this could have been improved by different after treatment. He believes it may prove to be the simplest and best method of imitating a brown iris, and the line of the limbus in total leucoma, but thinks a black pupil can more surely be made with ink.

Following Knapp's earlier report, we began some work on animals to de-

termine: 1. What concentration of gold chloride will produce the desired staining of corneal scars without causing too severe reactions.

2. Whether the stains are permanent.

3. Whether different kinds of scars react differently to the procedure.

Scars were first produced on the normal rabbit cornea, by inoculation of the scarified cornea with herpes virus and smallpox vaccine, and by application of trichloroacetic acid. The herpes scars were unsatisfactory because of the severe prolonged reaction, and the fact that, even when this had apparently subsided, the procedure of staining seemed to light up a latent herpetic process, and this reaction usually caused the disappearance of the stain. The smallpox inoculations were better, causing small, nonvascular scars. Applications of trichloroacetic acid proved to be the most convenient method, as scars of any desired size could be produced. An area of the desired size was touched with a cotton applicator just moistened with the pure liquid acid. The whitened epithelium was scraped off, and the applicator held on the denuded surface for a few seconds.

The solutions used were gold chloride 2, 4, and 5 per cent. The salt of gold chloride is dissolved in distilled water in whatever strength desired; but it was necessary to make it a little stronger than the final strength to be used, because of the fact that the stronger solutions which are acid must be neutralized. For this, NaHCO_3 and $\text{N}/2 \text{ NaOH}$ were used. The difficulty of neutralizing with NaHCO_3 lies in the fact, that such a large amount of the NaHCO_3 is necessary that the resulting gold chloride solution is too dilute, but with $\text{N}/2 \text{ NaOH}$, two or three drops to 10 cc. gives a solution that is almost neutral, being just slightly on the acid side. If the solution is made alkaline, there is a tendency for the gold to precipitate out.

The eye was first anesthetized, with either two per cent butyn, or ten per cent cocain. The strong cocain seems to be of advantage, for after it, the

epithelium can be more easily scraped off. After waiting five minutes, the area to be stained is outlined, very superficially, with a three millimeter trephine, and the epithelium within the outlined circle curetted off with a knife. The trephine works very well in small scars which it can cover, or to outline the central part of a large scar, when one wishes to stain the center a darker color than the border. Large scars may be outlined and scraped with a sharp knife. One must be sure that all the epithelium is completely removed. An applicator is dipped into the gold solution, touched

and nonvascular. Six scars were stained. In one case we first used two per cent gold chloride, the epithelium having been removed by outlining with a trephine, then curetting off the epithelium. This gave only a stain of the periphery so we restained with five per cent gold chloride for four minutes. This gave a good uniform brown stain. In the other five cases we used five per cent gold chloride for four minutes. These gave good brown stains, varying from brown to dark brown. In some cases the centers of the scars have a fainter stain than the border.

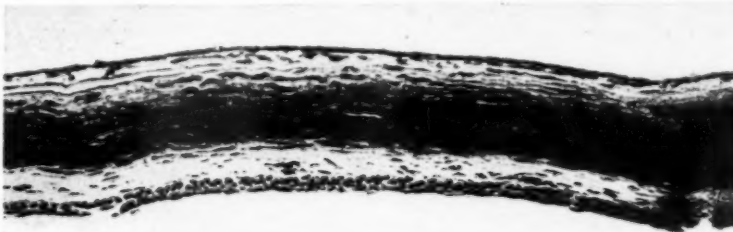


Fig. 1. Section of rabbit's cornea after use of gold chloride.

to the side of the container to do away with the excess of fluid, and applied to the area to be stained. After a minute the applicator is dried on a swab, and again dipped into the gold solution and applied to the area to be stained. This process is repeated until the solution has been in contact with the cornea for four minutes. At the end of this time the scar is seen to turn a grayish to a faint brown color. Five to ten drops of adrenalin 1-1000 are then dropped into the eye. Sometimes the scar is seen to turn brownish at once and at other times it does not turn so quickly. In twenty-four hours, the scar is either a black or dark brown color. The epithelium usually grows over the scars in a week's time or less, often 2 to 3 days.

With the above technic we found the following to be true.

(a) The clear cornea can be stained with two per cent gold chloride giving a good dark brown stain. The reaction to the operation is almost nil. We have one rabbit and two kittens whose stain has remained the same for nine months.

(b) Smallpox scars, usually small

A series of animals was stained with silver nitrate. This was applied directly to the area which was to be stained, and held till the tissue turned gray. Two per cent, four per cent, six per cent, and eight per cent silver nitrate was used, on the clear cornea. No result was obtained except with the four per cent, which gave a good black stain. But this happened only in one animal. Four per cent AgNO_3 was also applied to a smallpox scar, and a yellowish brown color, lighter than the iris, was obtained. We also tried to stain the cornea and corneal scars with silver nitrate 1/2 to 2% using Fontana's method for staining spirochetes (Mallory and Wright, Pathological Technic, page 444). The scars and cornea turned black at once, but in every case this faded later, leaving a yellowish white scar.

A solution of platinum chloride, five per cent, was tried, but no staining was produced on the normal cornea.

(d) Trichloroacetic acid scars. Four eyes were stained with four per cent gold chloride. The border in one case was stained with two per cent. The results were fairly dark brown stains.

A complication seen in these animals was a tendency of the epithelium to become thick in the centers of the scars, covering the stained area with a somewhat opaque mass, which when removed showed the brown stain beneath. This was not observed in our human cases.

Sections were made of one brown stain made on the normal cornea with five per cent gold chloride, the eye being removed after 15 weeks (See Fig. 1). They showed a deposit of fine

opacity, but this was ascribed to a lighting up of latent herpes, as it was not seen in the other scars. It was seen that stronger solutions were necessary to stain scars than to stain the normal cornea, and that there is a greater tendency of the stain to fade in scars than in the normal cornea. After the first weeks, however, what staining was present remained apparently unchanged. There was much less tendency to fading in the human cases than in the animals, perhaps on



Fig. 2. Case I before staining the cornea.

black granules, especially marked in the middle third of the cornea. Some granules were seen on Descemet's membrane. There were no signs of inflammation and the epithelium was fairly regular and uniform in thickness over the stained area. It is interesting that this stained area, which appeared brown in the living eye, appeared after removal of the cornea almost perfectly black against a white background. Apparently the other scars which appeared brown were the same color, but because of the thinness of the stained area, did not absorb enough light to appear black against the black pupil.

The work on animals was of value chiefly in confirming Knapp's claim that gold chloride solutions will produce black to brown stains of the cornea, and in indicating something as to the strength of solution to be used. No damage attributable to the reagent was seen in any of the eyes. In the vascular herpes scars there was severe reaction, and some increase in the

account of the more rapid vital processes in the young animals used.

We have been able to carry out this procedure on four human cases.

CASE 1. Alessa C., a girl of fourteen, was referred by Dr. Nora M. Fairchild from the Nebraska Dispensary. She had a very dense, but not notably vascular leucoma, with iris adherent but well covered, the result of ophthalmia neonatorum. (See Fig. 2.) After outlining the scar very superficially, with a four millimeter Gradle trephine, the epithelium inside this was scraped off, and a four per cent solution of gold chloride, not neutralized, was applied for four minutes. Adrenalin was instilled afterward and this was repeated several times at home. There was considerable pain for twenty-four hours. The next day the scar was almost black, the lower part being completely black, and the upper part a very dark grey. As the iris was very dark, the cosmetic result was very good. After six months the stain is about as dark as after twenty-

four hours (Fig. 3) and the scar is hardly noticeable at a distance of three feet.

CASE 2. Florence D., a girl of fifteen, had a large leucoma extending from the center of the left cornea nearly to the lower limbus. This had

two per cent solution. There was very little reaction or pain. The next day the central area was black, the peripheral area pale brown, with a few darker spots. Four months later, the mother informs us that the color has remained the same and the appearance



Fig. 3. Case I six months after the staining. The corneal reflex here makes the remaining gray area appear more noticeable than it really is.

been noticed since she was three days old; and since it was associated with posterior lenticonus, was considered as probably congenital in origin. (See Fig. 4.) Vision was 15/200 unimproved by correction. The pupillary portion was outlined by touching the epithelium very carefully with a fine cotton wrapped applicator, barely moistened with liquefied trichloroacetic acid, the epithelium removed from this area, and five per cent gold chloride solution, not neutralized, applied for three minutes. Then the lower portion was similarly treated, but with a

is good. Figure 5 shows the condition at this time.

CASE 3. Mr. R., aged 26, was injured with a wire, one and a half years before, causing a linear wound of the right cornea, with hemorrhage into the anterior chamber. Vision is hand movements. The eye presents the appearance of a large leucoma covering the upper two-thirds of the cornea, but on closer inspection this is seen to be due to a layer of new formed connective tissue just behind the cornea, the cornea, except for a small linear scar, being apparently normal. The central



Fig. 4. Case 2 before staining the cornea.

area was outlined with a four millimeter trephine and removed. Four or five radiating lines of superficial scarification were made from this area to the upper limbus. Three per cent gold chloride was applied to the central portion for four minutes, and the scarified lines were touched with the same solution for two minutes.

There was very little pain or reaction. The next day the central area was almost black, while the streaks

chalky white cataract. The cornea was normal. An area slightly larger than the largest diameter of the pupil (5 millimeters) was outlined carefully with a knife, the epithelium was curetted off thoroly and several crossing scarifications made in the substantia propria. Four per cent gold chloride, made almost neutral with Na OH, was applied for four minutes to the area. Twenty-four hours later, the stained area was pale grey. A four minute exposure of the scar to the uviol light was made, immediately after which the color had changed sur-



Fig. 5. Case 2. Condition four months after treatment.

were dark grey, approximating fairly well the color of the iris. Eleven weeks later the central area had faded somewhat, but was still a fairly dark brown, while the stripes over the iris had not faded (See Fig. 6). The central area was retouched, after scarification, and five per cent gold chloride applied for five minutes. Several additional radial stripes were made and touched with three per cent gold chloride for two minutes. The next day the central area and stripes were dark brown, and the appearance very good. There was very little pain after either application. Months after the first operation, the cosmetic result is good. (see Fig. 7.)

CASE 4. Miss L., aged eighteen, gave a history of blindness in the left eye since the age of five. This eye had no light perception, and presented a

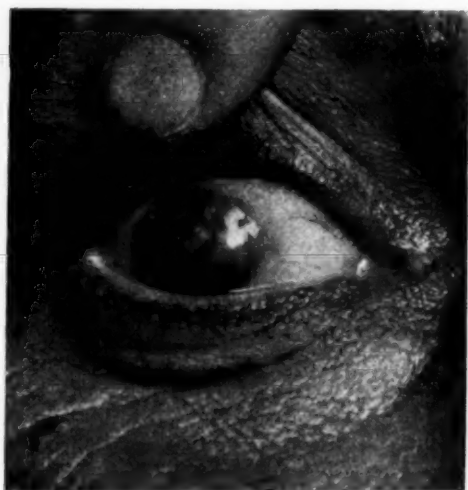


Fig. 6. Case 3 eleven weeks after the first staining.

prisingly, being a very dark grey. The uviol light was repeated later in the day and on the following day, but no further change in color was observed. The cosmetic result is excellent, hardly any difference being detectable between the two eyes at a distance of a few feet. Two months later, a photo shows that this condition has remained the same.

CONCLUSIONS.

1. The use of gold chloride as described, gives good cosmetic results. These have been in our first four cases at least as good as our best results by tattooing with ink, and much better than the worst.

2. It is simple. The whole procedure takes not over ten minutes. Good results can be expected in the hands of any trained oculist, without

special instruments for the purposes. Tattooing, while yielding beautiful results in the hands of an artist such as Holth, is a very painstaking procedure, requiring experience and special equipment.

3. It seems to be a safe procedure. The only untoward reaction to be reported is one case in which Aust saw a fairly severe iridocyclitis, which subsided without ill effects.

4. In our experience the after effects have not been as painful as tattooing. Two cases had practically no pain, and two had moderate pain for twelve to twenty-four hours, which was controlled by two per cent butyn.

5. Four and five per cent solutions can be used, without undue reaction. In our hands the two per cent solution did not give a dark enough stain to simulate the pupil, so a four per cent solution used for four minutes is advised for this purpose, or a five per cent solution in very dense scars. For scars over a light brown or blue iris, the same solution for two minutes or a two per cent solution for four minutes is advised. It is not absolutely necessary to neutralize a four per cent solution, and possibly a darker color is obtained by using the naturally acid solution. To minimize the reaction, some neutralization is probably best, but the solution should be kept slightly acid to phenolphthalein. We have seen no disadvantage, as claimed by Knapp, in using Na OH, if this precaution is observed.

6. The clear cornea stains most easily but good results can be also obtained in scars. Probably in very vascular scars the stain will fade considerably, but the procedure can be repeated if necessary.

7. In different cases and animals, the staining showed some differences which could not be explained; a dark grey to black resulting in some, and a brown in others. As suggested by the fact that these brown stains appear black against a white surface, it seems likely that these differences are due to the thickness of the layer of cornea impregnated and to the closeness of the black particles. We have observed a darker staining at the periphery, where the trephine has penetrated more deeply and believe with Jilek and Licsko that a darker color may be obtained by scarifying into the substantia propria after removing the epithelium.

8. As a reducing agent, the uviol light has given a marked result in the only case where it was used. Adrenalin seems to be of little or no value, and we have not tried the one per cent tannin recommended by Knapp.

9. Too little time has elapsed to state that the stains are permanent. Some of our animals have shown no change after nine months, however, and two cases have remained the same for six and seven months, so it is to be expected that no further change will occur.

Brandeis Theatre Bldg.

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CONGENITAL DISTICHIASIS.

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In this congenital anomaly a distinct second row of lashes arising from the inner margin of each lid was presented by a boy seven years old. The inner row of lashes was removed by electrolytic epilation, destroying the bulb of each of the cilia allowing them to be lifted out.

In reviewing the literature the term distichiasis has been used rather loosely by a number of writers. Generally speaking, it means a double row of eyelashes and has been considered by a few writers as varying degrees of trichiasis; that is a certain number of the lashes normally placed have assumed an abnormal direction. As there is a condition which is congenital, in which we have a second row of lashes springing from the posterior lid margin, the term should be reserved for this aberration in development. It has been my good fortune to be able to report the following case. The drawing well illustrates the condition, and hardly needs explanation. See pictures p. 249.

The patient, a boy seven years of age, was brought to me by a district nurse. His appearance suggested the eyes of one of those long haired dogs, as he peeped from behind his overabundance of lashes. Examination showed the upper and lower lids of both eyes to be affected. On the posterior edges of the lids, symmetrically and evenly placed, was a distinct posterior row of cilia with an even intermarginal space between. The lashes were as long, numerous, and as well developed, as the normal anterior rows; and were directed in an upward and downward direction from their respective lids, very nearly interlacing when the eyes were open. They rested against the cornea, which had the appearance of being protected by a layer of tears. A careful examination with the microscope failed to show any opacities. The patient complained of a sensation of sand in his eyes, with considerable lacrimation. He had no other congenital malformation.

OPERATION.

The child was given ether and the lashes were removed by Dr. O. K. Lang by electrolytic epilation. The procedure was as follows. With two fixation forceps the lid was held taut and everted so that an easy access could be had to the hair follicles. Working under a magnifying lens a very fine electrolysis needle, attached to the negative pole of a wall plate, was introduced along the side of the hair shaft to the papilla, and $\frac{3}{5}$ of a milliampere of galvanic current was passed for about 40 to 50 seconds. The positive pole was attached to a moistened flat electrode, pressed against the patient's hand by an assistant. After a few seconds a number of bubbles of oil passed alongside the needle from the exit of the hair demonstrating the introduction of the needle into the papilla. If this procedure was carried out in the proper manner the hair can now be lifted, not pulled, from its bed. There should be no resistance to its removal. In electrolytic epilation the following points should be emphasized:

1st. The needle should be introduced alongside the hair into the shaft, deep enough to reach the papilla.

2nd. The needle must be attached to the negative pole, otherwise pigmentation and scarring will result.

3rd. If left in position too long (over 50 seconds) deep pigmentation and scarring may result.

4th. The hair should be easily removed with no resistance, if the papilla has been destroyed.

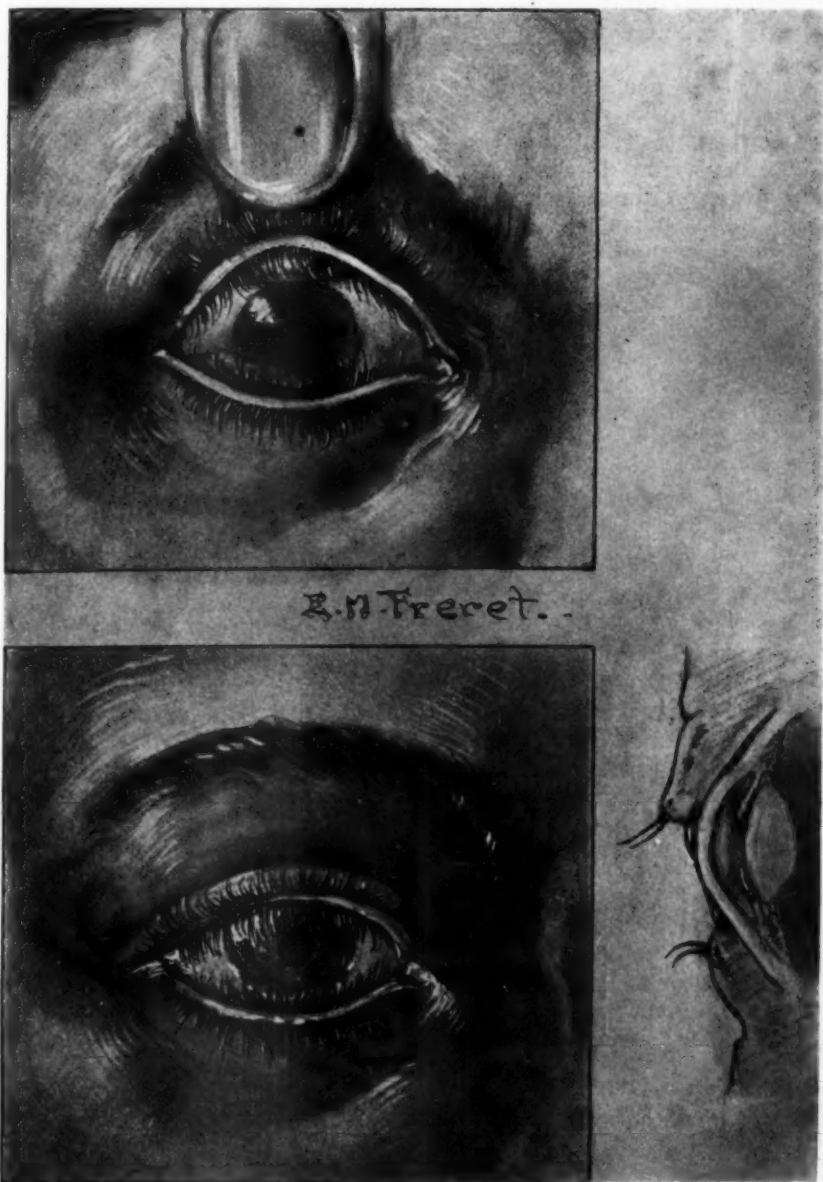
A second operation had to be performed to remove the hairs not visible at the first operation, because these hairs had been epilated by the patient. He made an uneventful recovery.

There was very little reaction following the operation, nor has subsequently any scarring or pigmentation developed.

A review of the literature is of interest. Mr. J. Herbert Parsons¹ in his book, *The Pathology of the Eye*, reports seeing "a case in which there were two perfect sets of cilia in each

of the four lids. The inner rows irritated the cornea."

A histologic examination of the lid, in one case by Kuhnt², showed that the inner cilia row had replaced the Meibomian glands, which were entirely absent. Moll's glands were hypertrophied, and there was a second row of Krauss' glands in the middle



Congenital distichiasis. Upper figure lid and lashes everted. Below, Lids in usual position with diagram of section showing relations of two rows of lashes.

of the tarsus. According to Collins and Mayou³ "when the eyelids have their margins united two rows of epithelial downgrowths form; the outer developing into the hair follicles of the cilia and the inner into the Meibomian glands. In distichiasis both rows developed into hair follicles and no Meibomian glands are formed. It has been suggested that the hypertrophy of Moll's glands is due to an attempt on their part to supply the missing secretion."

Szily⁴ reports a case of distichiasis congenita vera, with hair formation in the Meibomian glands. The patient, a boy aged 15, had from birth in addition to the normal cilia, a second row 30 to 36 in number, springing from the site of the Meibomian glands and arising from their ducts. Their length on the upper lid was about 8 mm. and on the lower lid 5 mm.; by everting the lids the hairs showed thru the yellowish ducts covered by conjunctiva. The cornea presented a number of irregular old opacities with abundant vascularization below. This patient complained of photophobia, and the upward motion of the eyeball was hindered by friction from the posterior row of cilia. The posterior layer of the lid was detached by an intermarginal section, and the posterior or border bearing the lashes was removed by an incision parallel to the lid margin. According to Szily distichiasis congenita vera is a real idiopathic, recessively hereditary, malformation. The posterior row of lashes does not consist of displaced cilia, but has the character of rudimentary Meibomian glands. With the greatest probability they are phylogenic stages of that transmutation thru which the common hairs, some time in their transition to Meibomian glands, passed in the ancestors of the now living animals.

Begle⁵ adds one to a total of twenty-five cases previously reported in literature. The patient was a woman aged 30. The posterior cilia sprang from the normal position of the openings of the Meibomian glands; lay close to the eyeball and rubbed the cornea in their entire length. Here and there on each lid margin was a glandular opening on a line with the cilia. Some were removed by electrolysis, but the majority by excision of a strip of posterior lid margin, the defect being covered by mucous membrane from the lip. Microscopic study showed absence of the Meibomian glands, which were represented by hyperplastic sebaceous glands discharging into the follicles of well developed accessory cilia, and also by small simple sebaceous glands irregularly scattered just beneath the lid margin, and discharging on its surface.

Sydney Tibbles⁶ reports a case of eyelid penetration in separate places by eyelashes. On the free edge of the upper lid were two faintly blue vertical streaks, an eighth of an inch apart. On everting the lid, these were seen to run backward toward the sulcus subarsalis, where one of them terminated in the free tip of an eyelash. The second one, tho it had penetrated the lid, had not perforated the conjunctiva. Apparently both lashes had grown backward from their roots, thru the substance of the lids.

CONCLUSIONS.

In the writer's opinion electrolytic epilation offers the easiest, the most permanent and least disfiguring procedure, to rectify this condition. Where repeated mechanical epilation has to be resorted to, a permanent cure is obtained by the above method, and should be more universally employed.
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PEMPHIGUS OF BOTH EYES.

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This patient had sore eyes and a sore mouth for fifteen months and came with vision reduced to hand movements. Corneas hazy and extensive symblepharon. Attempts to break up adhesions gave no permanent benefit. Treatment for pemphigus caused temporary improvement. Presented before the Chicago Ophthalmological Society, November 15, 1926.

The following case would seem worthy of detail report, owing to its comparative rarity and the interesting course it has run while under observation.

HISTORY. Mrs. Rose S. was assigned to my service at the Illinois Charitable Eye and Ear Infirmary March 11,

time again, and with each relapse she felt that her eyes were growing progressively worse. Later she experienced some difficulty in opening her eyes and for the past two months she has been unable to raise the upper lid of either eye. At about the same time that her eye trouble began, she discov-



Fig. 1. Goldenburg's case of pemphigus of both eyes with lids separated, (stereoscopic view).

1926, with the following history: Age 56, widow, white, mother of eight children, seven living and healthy, one died a few hours after birth. Has always enjoyed good health, except that she had hay fever up to seven or eight years ago. Has had sore eyes for the past fifteen months, which began with a burning and smarting sensation followed shortly by a mucopurulent discharge. Both eyes were red and the lids swollen for some time. Eventually they seemed to improve for a short time, and then would again become troublesome, and later again improve, but the condition never wholly disappeared at any time.

These relapses recurred time and

ered sores in her mouth and about her gums. Thinking that her teeth were the cause of these sores and probably a factor in the ocular disturbance, she had all her teeth extracted (at the suggestion of some friend) with no apparent improvement. From her history it would appear that both the ocular and oral conditions developed at about one and the same time, and also manifested improvement and relapse in a like manner.

Ocular Examination. O. D. Vision, hand movements. Upper lid hypertrophied and firm with some entropion with trichiasis. Almost complete symblepharon; the palpebral and bulbar conjunctiva were fused thruout the

greater part. The upper lid slightly overlapped the cornea and was firmly adherent. The upper half of the cornea was rough, with patches of what appeared like grayish tissue undergoing degeneration and exfoliation. Between these patches were found uneven translucent areas possessing a brilliant

emaciated. She feels well in general and is conscious of no pain or discomfort other than that produced by the ocular and oral pathology. She states that she has always been thin, and that this is a family characteristic.

Laboratory Findings. Blood Wasserman, negative.



Fig. 2. Pemphigus lesions of gums and lower lip.

luster, and beyond this a grayish haze that could be detected with proper illumination and magnification.

O. S. Vision, fingers at one foot. The condition here is practically the same as in the right eye, but not advanced to the same degree.

Oral Examination. Patches of superficial erosion of gingiva, more marked in the inferior alveolar process anteriorly and the buccal mucosa near the ramus on the left side. If these patches are rubbed with a cotton swab they bleed readily and appear like a broad shallow ulcer, with tags of dead epithelium about the borders. These lesions are of various sizes and shapes.

Vaginal Examination disclosed what appeared like superficial ulcerations along the medial surface of the labium. *General Physical Examination* disclosed nothing of any import, other than a woman of slight stature, somewhat

Blood Differential:

Hgb	85%
W. B. C.....	12,100
R. B. C.....	4,440,000
Polys.	72%
Large Mono.	10%
Small Mono.	14%
Eosinophiles	2%
Basophile	1%
Trans.	1%

Blood chemistry, negative.

Smears and cultures from eyes disclosed nothing unusual.

Nose and throat examination disclosed nothing unusual (other than the oral findings).

The ocular diagnosis in this case was very difficult. The first thought that occurred to this reporter was that we were dealing with some form of a degenerative process, probably of a nutritive character. The patient was thin and emaciated, and lacked the

vigor or muscle tonicity one would expect in one her age. Xerosis and keratomalacia were nevertheless readily ruled out. Hyalin, colloid, and amyloid degenerations were thought of but were likewise excluded. Trachoma or a chemical burn, could not be considered seriously, and altho pemphigus was thought of, a definite diagnosis could not be made at the time. In a service at the Infirmary, covering a period of eighteen years where an abundant material of every kind and character is always present, I did not have the good for-

blunt spatula was used and the parts separated were rough and bleeding, and looked much like a comparatively smooth but slowly granulating surface.

On March 27, 1926, the general condition of the eyes and lids appeared much improved; a considerable part of both corneas seemed free and clear. Altho the case was seen every day, the daily minute changes were not recorded. The improvement was but fleeting. Later the disease again manifested activity and one could note the slow but positive encroachment on the cornea from above.



Fig. 3. View of right eye showing adhesion of lids to eyeball.

tune of seeing a case of this type before, nor had I heard of such a case in the institution during my time.

Therefore, in view of the fact that the diagnosis could not be definitely established at once, the case was hospitalized for further study, and the manifest pathology treated accordingly. The corneal lesions were touched with tincture of iodine and atropin ointment used freely. The patient was placed on a nutritious diet and liberal doses of cod liver oil given internally.

On March 14, 1926, an attempt, under local anesthesia, to break up the adhesions between the lids and eyeball, for the purpose of controlling the entropion and trichiasis was painful and unsuccessful. This was, later, again attempted under general anesthesia with considerable benefit. A

On April 16, 1926, the condition was decidedly worse; adhesions again reforming, marked roughening and exfoliation of superficial corneal layers, progressing. Oral pathology likewise worse.

At about this time, it was the consensus of opinion that we were dealing with a case of pemphigus, for which we could do nothing, other than treat the local pathology as the indications warranted. Dr. Stillians, dermatologist of Northwestern University, was good enough to look at the case, when he confirmed our diagnosis, and further suggested the Davis treatment of pemphigus, which consists of the use of coagulum ciba 5 c.c., intravenously every other day and on the alternating days, deep intramuscular injections of cacodylate of iron.

The case was later presented before

the dermatologic society, where the diagnosis of pemphigus was unanimously confirmed.

The patient seemed worse after the first three or four injections, but later showed improvement and on May 15, 1926, the case was recorded as decidedly better, and the disease seemingly arrested. The cornea was less hazy, and the progressive destruction stopped, with an apparent attempt at

courses, and as frequent as the patient could tolerate them.

PRESENT FINDINGS.

R. Eye. Complete symblepharon. Intrapalpebral opening in the greatest vertical diameter is about four millimeters. A band of dense white connective tissue is seen at the junction of the cornea to the upper lid. What must be cornea underneath is covered by a dense pinkish-white tis-

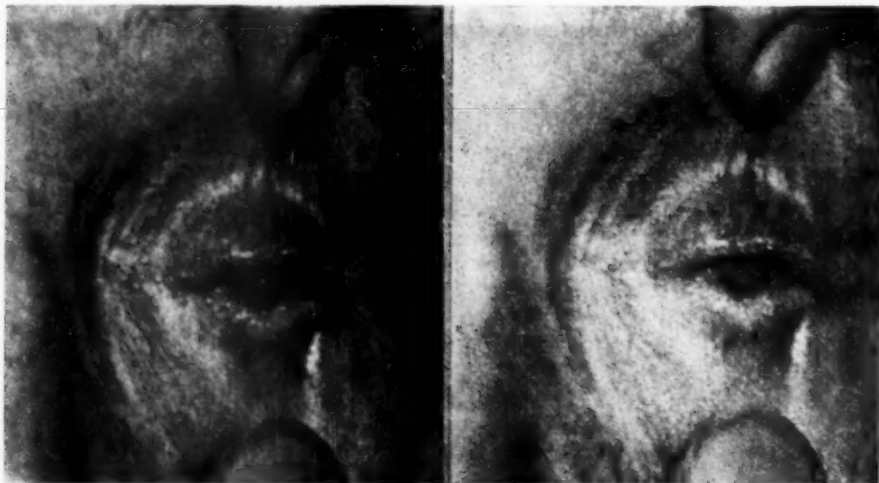


Fig. 4. Left, eye with lids separated as far as possible.

healing. The patient stated that she felt better, and that the sores in her mouth were also better.

On June 1, 1926, the condition was about the same, symblepharon reforming, secretion from the conjunctiva marked. Injection treatment discontinued owing to the pain and discomfort following.

On July 1, 1926, the condition was worse. Cornea of right eye being encroached upon by the lids, with marked infiltration and scar formation of exposed cornea. Left cornea similar, but not to the same extent. She was permitted to go home for a time, to report occasionally. From this time to the present, she has shown many periods of arrest and relapse. The injection treatment was given in

sue. Vision, nil; but patient insists that she recognizes light.

L. Eye. Symblepharon totale. Intrapalpebral opening in the greatest vertical diameter about six millimeters. White connective tissue band seen on the cornea, where it is adherent to the upper lid.

Small area of the cornea below and to nasal side is sufficiently transparent to permit one to recognize the iris and a section of the pupil. Vision: Fingers at one foot. Insists that she has more vision than we can give her credit for; and seems to get about the institution fairly easily.

Oral findings, distinctly worse; but patient states she feels very well, and only notes discomfort when she eats or drinks anything that is sharply acid.

SARCOID OF THE EYELIDS. c

LOUIS LEHRFELD, M.D.

PHILADELPHIA.

The term "sarcoid" proposed by Kaposi for skin lesions of varied etiology and character was applied by Boeck to a benign disease of the skin causing tubercles or nodules. In a case reported by Derby, Verhoeff found no bacilli in the tubercles but giant cells containing crystals. The case here reported is the second in which the lids were affected but the eyes were otherwise normal. It was presented to the College of Physicians of Philadelphia, November 18, 1926.

At the request of my associate, Dr. Mitchell Bernstein, I examined the eyes of Mr. S. M., age 50 years, August 19, 1926, having been referred because of ptosis of the right upper eyelid. Examination revealed two nodules in the body of the lid and one on the border at the outer third. These nodules resembled chalazia except that the skin covering them had a bluish tinge, and that at the lid border resembled a nevus. The eyelid was quite stiff resisting eversion, which was accomplished only by considerable effort. The mucous membrane beneath the site of the nodules was hyperemic very much like that accompanying large chalazia.

Similar nodules firmer in appearance were noted on the lobes of the ears. Flat, slightly elevated and broader skin lesions were found on the chest, back, thighs, abdomen and fingers. These were a deep red wine color well circumscribed, round, oval or quadrate. The entire skin of the body had a cyanotic appearance.

I will not attempt to describe the general distribution of the lesions except to say that the eyelid lesions were part of a general skin disease. The patient presented the following constitutional symptoms: cough, hemoptysis, cardiorenal disease, edema of the lower extremities, a polycythemia followed later by secondary anemia and moderate leucocytosis.

When seen again September 23rd, the nodules in the body of the right eyelid had extended in size occupying nearly the entire surface of the skin and by mere weight and mechanical obstruction prevented any eversion of the lid and producing a ptosis of such degree that the palpebral fissure was

almost closed. Another violaceous nodule appeared near the inner canthus of the upper lid since last examination, four weeks ago. There also appeared for the first time a nodule on the left lower lid near the external canthus and another high up in the lid just below the eyebrow. The fundus showed no disease, and the refractive error was two diopters of myopia both eyes.

Since September 23rd, the patient experienced a change in the character of the nodules, the large elevated lesions being softer and dark red, others lighter red. Those on the eyelids appeared to become more extensive with other large flat patches over the eyebrows of both eyes.

My associate referred the case to Dr. Mitchell Sidlick, a dermatologist, who diagnosed the case clinically as one of sarcoid and later verified the diagnosis by pathologic examination of an excised nodule, taken from the skin of the abdomen. Pathologically, the lesions resembled very much that of tubercles seen in tuberculosis.

Dr. Mitchell Sidlick reports histologic examination as follows: "Cell nests resembling tubercle formations are found, separated from each other by connective tissue substance. A cellular infiltration in the tubercles is composed of epithelioid connective tissue cells.

"The corium shows a connective tissue cell proliferation. In some places capillary loops of papilla are present."

Dr. F. H. Verhoeff (Archives of Ophthalmology, v. 46, p. 313) reports the microscopic examination of Derby's case as follows:

"There is seen a conglomeration of tubercles, partly or wholly separated

from each other by septa of connective tissue. All of the tubercles seem to be situated in distended lymph spaces, the involvement extending thru the entire thickness of the skin into the underlying fat tissue and muscle. The tubercles are always separated from the surface epithelium by a layer of connective tissue. Under the low power the general configuration closely simulates the appearance presented by an epithelioma of the skin which is invading the lymph spaces. The tubercles vary greatly in size, the largest occurring in the superficial lymphatics and the smallest in the deepest layers and at the periphery, where the process is evidently extending. The tubercles are made up of typical epithelioid (endothelial) cells, which have gone on to the abundant formation of giant cells, many of the latter being of the Langhans type. The larger the tubercles, the larger and more numerous the giant cells. Blood vessels are only oc-

asionally seen within the tubercles. The tubercles show no infiltration with pus cells, but there is slight infiltration with lymphoid cells, generally at their peripheries. There is no necrosis of any kind to be seen. The stroma between the tubercles is notably free from inflammatory reaction.

"Sections stained for tubercle bacilli fail to show any organism present."

No tubercle bacilli were found in the sections of this case, or in the fluid obtained in theappings for the relief of hydrothorax.

The etiology of sarcoid is not known.

I present the case because of the rarity of the disease, especially as to the involvement of the ocular structures. Derby reported a case in 1911 as the first in ophthalmic literature, and I wish to add this one to our records.

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VISUAL RESULTS WITH TELESCOPIC SPECTACLES.

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ST. LOUIS, MO.

The classes of cases in which such spectacles were tried are defined and details of ten cases are reported. Of 85 eyes 60 showed improvement with these glasses, of 2 to 15 times the vision obtained by correction with ordinary lenses. Read before the Ophthalmic Section of the St. Louis Medical Society.

In June, 1924, Gradle and Stein, of Chicago, presented before the Section on Ophthalmology at the American Medical Association meeting, a splendid resumé on the telescopic spectacles and a report of sixteen cases. I refer you to this article for the history, construction and understanding of the physiologic optics of these so-called "Distal" lenses. My purpose is simply to cite a series of sixty-five cases seen over a period of two years.

At this time I wish to express my appreciation to my associates, Doctors Wolfner, Wiener and Alvis, who have aided me in this work and supplied many patients in this series. Also my thanks are extended to the firm of A. S. Aloe for their cooperation and especially to Mr. Kaiser and Mr. Albert Aloe for their painstaking care and

untiring patience in adjusting these lenses.

Since the publication afore mentioned, very little has appeared in the literature on this subject, a few stray case reports in the foreign journals; and one case by Dr. J. W. Charles of this city.

In the summary appended I will mention in some detail the difficulties and prime factors in the use and adaptation of the telescopic lenses. All cases in this series were tested for one or more of these four reasons:

1. Poor vision with ordinary lenses, especially inability to read fine print.
2. To tide the patient over a period when something further in an operative measure could be done.
3. Elderly or unhealthy individuals

in which operative procedure was a decided risk.

4. To demonstrate to the patient that a poor vision could at any time be enhanced.

Outstanding cases are given briefly and the entire series is summarized in tables.

The magnification of the telescopic element $+0$ used in all cases is 1.8 X. I have attempted to classify the cases reported, so that one may judge the type of case for which the distal lens is applicable. Many cases fall under more than one group and hence it has been necessary to repeat some cases and thus make the total seem more than sixty-five.

Seven groups have been enumerated as follows:

	No. of Cases.
1—Cataracts	22
2—Retinal lesions	17
3—Optic atrophy	14
4—Myopia and choroidal atrophy..	12
5—Scars of cornea	8
6—Physical anomalies	7
7—Glaucoma	6

Under cataracts are included congenital, incipient, immature, mature and operated.

The retinal lesions class includes chorioretinitis, five cases; central retinitis, three cases; retinitis circinata, one case; retinitis atrophicans, two cases; neuroretinitis hemorrhagica, one case; detachment of the retina, one case; and two cases each of posterior uveitis and keratoiritis are included in this group.

The optic atrophy cases are due to various causes, syphilis, familial, following infections, etc.

The class under myopia and choroidal atrophy include those cases of very high myopia some of which pass on to injury of the choroid.

Scars of the cornea due for the most part to ophthalmia neonatorum, ulcers and injury.

The group of physical anomalies includes three nystagmus cases; and one each of keratoconus, amblyopia, microphthalmos and a strabismus con-

vergens with high degree of compound hyperopic astigmatism.

In the glaucoma group are those with narrowed fields, congenital hydrophthalmos, etc.

All cases are patients who have both eyes affected.

Mrs. A. S., age 45, complaining of poor vision in both eyes, worse in left for past year. Visual acuity right = 20/100, $+2.5$ D. S. = 20/50. Visual acuity left = 20/200, $+2.5$ D. S. = 20/75, unable to improve near vision so as to read ordinary newspaper print. Fundus examination showed incipient cataract, striae in both lenses, more and denser in left. The patient was not eager to undergo operation as she lived in Albuquerque, New Mexico, and with an operation to ripen the lens and then another for extraction, she preferred to wait until there was more time at her disposal. Distals were tried and it was found that the better eye could be brought to 20/30 with a $+3.0$ telescopic element, and she read D. 0.5 and ordinary newspaper print with ease, with a $+8.0$ object side lens. These were prescribed and the patient used them for over a year during which time, she never gave up her reading. After this period the poorer eye was ready for operation.

Mr. E. J. M., age 58. The right eye was operated at the age of eleven for convergent strabismus, since then it has turned out and is an amblyopic eye. At the age of eighteen Dr. H. Knapp found an incipient cataract in the left eye which advanced and was operated ten years ago by Dr. Suker, of Chicago. In 1920 the tension of this left eye measured 70 with a Schiötz tonometer and a trephining was done by Dr. Suker. Since then he has been under the care of various men, the tension of the eye being always above normal. Using $\frac{1}{4}\%$ pilocarpin and $\frac{1}{8}\%$ eserine three times a day at present.

A trephine was advised and in order to assure the patient that the always useless eye, the amblyopic right eye, would always stand him in good stead, the distals were tried. His visual acuity, right, was 20/200. With a

+4.0 telescopic element his vision was brought to 20/100 and by adding a +8.0 object side lens he could be made to read D. 0.75 and ordinary newspaper print readily. Thus a reserve eye was demonstrated, altho since then he has been operated successfully and the left eye restored to normal tension and function.

Mr. W. H., age 79, had the right eye operated for cataract some five years ago but vision is poor due to a capsular remain. The left eye when first seen five years ago had normal vision but the lens showed a few striae. The right eye was operated, a Ziegler capsuloridotomy being done with good operative result but it was found that the disc was pale and the patient had only light perception. Some time later he appeared with numerous hemorrhages around the disc and macular region in the left eye. The cause for these was determined, a purulent prostatic affection, and relieved, the eye cleared but the damage had been done and his best vision was 20/200. A +4.0 telescopic element brought his visual acuity to 20/100 and with a +10.0 object side lens he read D. 0.75 and newspaper print readily. He has worn this glass for two years and has nothing but praise for the sight saver.

Of eighty-five eyes examined 79 or 94% were improved for distance. To prepare you for a clear understanding of the figures to follow, it will be necessary to digress for a few minutes to explain what is meant by increase in vision. All measurements are at 20 feet or fraction when necessary, on the usual Snellen chart with letters 300, 200, 100, 75, 50, 40, 30, 20, and 15. So where the patient's vision is said to be increased two times, an example would be from 20/40th to 20/20th. Of the eighty-five eyes tested with distals, the vision, over the correction with ordinary lenses, was increased as follows:

To 15 times	2 cases
To 8 times	1 case
To 6 times	5 cases
To 4 times	6 cases
To 3 times	28 cases
To 2½ times	3 cases

Sixty eyes or 70% were increased in vision two times or over, nineteen cases were improved less than two times. Six cases were unimproved.

The increase in vision for near was as follows in sixty-six cases: To reading of ordinary small type newspaper print which includes reading D. 0.5 and D. 0.75, 48 cases or 72%; nine cases were made to read D. 1.0, two D. 1.25, three D. 1.5, and four or 5% were unable to be helped materially.

I have chosen ten cases from this series to present to you in detail so that you may gain an idea of the practical application of the "Distal" lenses.

CASE I. Mr. L. A., age 76. Diagnosis: incipient cataracts, bilateral. 12-12-20. Visual acuity right = 20/25 none better. Visual acuity left = 20/30. Lenses slightly dense. With + 3.0 D.S. over each eye reads D. 0.5 at eight inches. 3-19-21. Visual acuity right = 20/30. Visual acuity left = 20/40. 8-1-25. Visual acuity right = 20/30. Visual acuity left = 20/100. 1-28-26. Visual acuity right = 20/50. Visual acuity left = 6/200. Distals: Visual acuity right +0 telescopic element \odot + 0.5 D. Cyl. ax 0 added = 20/20—. Reads 0.5 D. with + 6.0 D. S. object side over above and newspaper readily.

CASE II. Mrs. T. B., age 60. Diagnosis: Retinitis circinata, bilateral 1-3-25. Visual acuity right = 6/300. Visual acuity left = 20/25. -0.25 D.S. \odot -0.37 D. Cyl. ax 90 = 20/12. Fundus. numerous cholesterol crystals surrounding macula in both eyes. Very large and square shaped, more prominent than ever seen (Dr. Wiener). More in right than left. Central scotomata both eyes. 3-3-25. Visual acuity right = 20/20. Visual acuity left = 20/30. 4-8-26. Visual acuity right = 20/50. Visual acuity left 10/200, -0.5 D.S. = 20/200. 5-24-25. Visual acuity right = 20/75, -0.75 D.S. = 20/50. Visual acuity left = 20/300, -1.0 D.S. = 20/150. Distals, visual acuity right +0 telescopic element = 20/20—. Reads D. 0.5 and newspaper readily with +6.0 D.S. object side. Uses them at all times.

CASE III. Mr. J. D. Diagnosis: Myopia-choroidal atrophy. 9-23-25. Visual acuity right -7.0 D.S. $\odot -3.0$ D. Cyl. ax 95 = 20/75. Visual acuity left -7.0 D.S. $\odot -3.0$ D. Cyl. ax 75 = 5/200. Large area choroidal atrophy, left. Distals, visual acuity right -7.0 D.S. telescopic element $\odot -3.0$ D. Cyl. ax 95 = 20/40. Visual acuity left telescopic element $\odot -3.5$ D. Cyl. ax 75 = 20/200. Reads D. 0.5 with $+9.0$ D.S. object side over sight lens. Reads newspaper readily.

CASE IV. Master R. F. Diagnosis: Optic atrophy resulting from tumor of choroid of carotid foramen removed by Dr. Sachs of this city. 5-10-22. Visual acuity right = no perception for light. Visual acuity left = 20/100. Left homonymous hemianopsia. Tumor removed. 6-17-26. Visual acuity right = no perception of light. Visual acuity left = 15/200. Distals. Visual acuity left $+0$ telescopic element = 20/200. With $+8.0$ D.S. object side reads D. 0.75. 8-17-26. Distals, visual acuity left -3.0 T. E. = 20/100; with $+8.0$ object side reads newspaper readily.

CASE V. Mr. H. S. H., age 33. Diagnosis: Congenital nystagmus, hyperopia and astigmatism. 2-8-26. Visual acuity right = 20/100, $+4.0$ D.S. $\odot -1.0$ D. Cyl. ax 170 = 20/50. Visual acuity left = 20/100, $+2.5$ D. Cyl. ax 120 = 20/50. Unable to improve distance vision either eye with any distal combination but reads D. 0.75 and newspaper readily with telescopic element $+3.0$ D.S. $\odot -1.25$ D. Cyl. ax 150 with $+8.0$ object side lens over right eye.

CASE VI. Master W. I., age 12. Diagnosis: Strabismus convergens, compound hyperopic astigmatism, congenital amblyopia, bilateral. 3-24-20. Visual acuity right = 6/200. Visual acuity left = 3/200. 12-11-22. Visual acuity right $+6.0$ D.S. $\odot -4.5$ D. Cyl. ax 170 = 20/300. Visual acuity left $+6.0$ D.S. $\odot -4.5$ D. Cyl. ax 0 = 20/300. 3-19-25. Distals, visual acuity right telescopic element as above = 20/100. Visual acuity left telescopic element as above = 20/100. Visual acuity left telescopic element as

above 20/100. Reads D. 0.75 and newspaper readily with $+10.0$ object side over either.

CASE VII. Mrs. J. R. K., age 58. Diagnosis: Detachment of retina, bilateral. 6-7-24. Visual acuity right = 3/100. Visual acuity left = 3/100. 10-2-25. Visual acuity right $+3.0$ D.S. = 20/300. Visual acuity left $+3.0$ D.S. = 20/100. 10-9-25. Distals, visual acuity left $+5.5$ D.S. telescopic element = 20/50, and with $+10.0$ D.S. object side lens reads D. 0.75 and newspaper readily.

CASE VII. Mr. A. K., age 27. Diagnosis: Congenital cataracts, operated. 11-15-15. Visual acuity right $+13.0$ D.S. = 20/200. Visual acuity left $+13.0$ D.S. = 20/200. 5-25-25. Distals, visual acuity right $+13.0$ telescopic element = 20/50. Visual acuity left $+12.0$ telescopic element = 20/50. With $+8.0$ object side reads D. 0.5 and newspaper readily.

CASE IX. Mr. J. H. L. Age 26. Diagnosis: Keratoconus, very high degree. 11-14-24. Visual acuity right = 5/300 -40.0 D.S. = 10/200. Visual acuity left = 5/300 -54.0 D.S. = 14/100. Distals, visual acuity right -34 O. D. S. = 20/20. Visual acuity left -31 O. D. S. = 20/20. No $+$ object side lens increases near vision. 11-19-24. Visual acuity right and left -20.0 D.S. $\odot -20.0$ D. Cyl. ax 0 = 20/30 e.e. Reads D. 0.75 and newspaper readily and ordered.

CASE X. Mrs. A. M., age 71. Diagnosis: Cataract right, glaucoma simplex, bilateral. 7-17-26. Visual acuity right = 20/100. Visual acuity left = 20/100 $+1.0$ D.S. = better. 7-23-26. Distals, visual acuity right $+1.5$ telescopic element = 20/30. Visual acuity left $+1.5$ telescopic element = 20/50. With $+8.0$ object side over right reads D. 1.0.

Conclusions and summary. From the brief report of these ten cases you have no doubt recognized the types of cases for which the telescopic lenses are useful, but no amount of case reports or explanation could in any measure bring to you the knowledge of the amount of patience, care and even coercion necessary to urge the

patient to wear them. The easiest job is demonstrating to the patient how much the distals improve his or her vision. They are eager to give them a trial and always go away rejoicing. I never fail to warn them that they will return complaining. These complaints are many. The weight of the lenses, their ugliness, the small field, the limited focus, and the enlargement of objects, together with symptoms of headaches, drawing of the eyes, dizziness, pressure symptoms from the frame and other complaints too numerous to mention must be overcome. Where the lenses are used on both eyes for distance the adjustment must be perfect otherwise the patient gets a blur.

The distals cost from fifty to seventy-five dollars a pair, and sometimes it is necessary to await their importation from Europe. One might pause here to speculate on the results which could be obtained even in our

blind institutions if the financial detail were of secondary importance.

The following rules hold with few exceptions:

1. The patient sees best with the distals in terms of his or her ordinary refraction.

2. Perseverance of the patient usually gives perfect results.

3. The reading attachment must not focus the print closer than eight inches.

4. Practice and persistence always result in greater vision and flexibility of use.

5. Where the price of the lens is of secondary consideration a prescription is given after the final trial, others are loaned temporarily for trial.

I am especially interested to learn what results other oculists have had with these lenses and welcome suggestions, also I will be glad to answer any questions, if I am able, on any phase of this work.

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CYCLODIALYSIS UPON THE EYES OF RABBITS.

WM. A. STOUTENBOROUGH, M.D., M.Sc.

COLUMBUS, OHIO.

Glaucoma as seen in the human eye is not observed in lower animals. But experimental cyclodialysis in the rabbit throws some light on its effects in the human eye, and the histologic changes produced by the operation. In the series of experiments here reported, cyclodialysis produced moderate temporary reduction of tension, due to a temporary drainage canal between the ciliary body and the sclera, which later closed by cicatrization. Injury to Descemet's membrane caused corneal opacity and anterior synechia. Abstract of thesis submitted in the Graduate School of the University of Pennsylvania, for the degree Master of Science in Ophthalmology.

Fuchs and Axenfeld observed that in a large percent of cases operated upon for glaucoma, in which incisions into the anterior chamber were made, a detachment of the choroid occurred and they believed it possible that the beneficial results were due to the detachment. With the observations of these men in mind Heine conceived the idea which resulted in the operation which he called cyclodialysis, or which is known as the Heine operation, and which he first described in 1905¹

The outstanding feature of the operation is the establishment of a communication between the anterior chamber and the suprachoroidal spaces,

secured by inserting a spatula thru a small incision in the conjunctiva and sclera, posterior to the limbus, passing it forward between the sclera and ciliary body and by gentle sweeping movements separating these structures. For the technic of the operation the reader is referred to work on ophthalmic surgery.

Heine's original theory concerning the *modus operandi* of the operation was that the contraction of the ciliary muscle pulled the ciliary body away from the sclera, preventing its reattachment, and thus formed a permanent filtration path. Experimental work and studies of the operated eyes have, however, disproved this and he

has since modified his theory and now considers that a capillary fistula formation occurs between the ciliary body and sclera which drains the aqueous humor from the anterior chamber.

Other observers hold different views. Krauss² found in his experiments on animals that there was firm attachment formed between the ciliary body and the sclera. He believes that the reduction in tension is due to atrophy of the ciliary body from trauma with a reduction of secretion of aqueous.

The same view is shared by Pyle,³ Meller,³ Gifford,³ Wichodzeff,³ Judin,³ Elsberg,³ Salus³ and others. Wernicke⁴ found a delicate cicatrix between the ciliary body and the sclera and thinks this may drain the aqueous from the anterior chamber. Blatt⁵ feels that the neurogenic view as to the origin of glaucoma should be considered and states that, "Possibly the tension reducing effect of cyclodialysis is brought about thru the destruction and dissolution of continuity of the ciliary nerves of the suprachoroidal and supraciliary tissues." Gradle³ believes the reduction in tension is due to freeing the angle of the anterior chamber, allowing the aqueous to escape

mal was operated; the left being used as a control in taking the tension.

The latter was in most cases, also operated at the time the right eye was enucleated and the animal killed, in order to determine the amount of trauma, etc., immediately following the operation. The operations were performed under ether anesthesia, according to the technic described by Meller¹¹ and with due care as to asepsis.

Report of operations. Rabbit No. 2. Operated Feb. 2, 1925.

Soon after the operation was completed it was discovered that a very small quantity of blood had oozed into the anterior chamber. This was absorbed within 24 hours. On the second day the cornea showed a small faint opacity at the limbus which persisted. The slitlamp showed this to be in the substantia propria and due to injury of Descemet's membrane by the spatula as it entered the anterior chamber. The reaction was moderate and had practically disappeared by the fifth day. It was noted in this as well as all other operations that the iris quickly contracted as soon as the separation of the ciliary body was made. The contraction remaining 2 to 4 days.

Day after operation..... *	1	2	5	7	9	12	15	18	22	28	32	
Tension O. D.....	19	16	18	18	16	18	16	17	18	18	17	18
Tension O. S.....	19	19	20	20	20	18	20	18	18	19	18	18

thru the canal of Schlemm. This theory has perhaps the greatest number of adherents.

The various views naturally lead to a difference of opinion as regards indications and contraindications, thus influencing the selection of cases, and eventually determining the status of the operation in the minds of the ophthalmic surgeons.

With these facts in mind a series of experiments upon rabbits was undertaken to determine the effect of cyclodialysis upon the tension of the eye and, if possible, the *modus operandi* of the operation, hoping thereby to arrive at some definite conclusions.

The series consists of fourteen cases in which the right eye, only, if each ani-

Histologic examination showed the incision healed. The ciliary body and sclera were firmly adherent, the former line of separation being seen with difficulty. The ciliary body and processes were normal in appearance. There was a small anterior synechia near the angle of the anterior chamber. The root of the iris, however, was free. With the exception of the synechia the appearance was practically the same as an unoperated eye.

Rabbit No. 3. Operated Feb. 2, 1925.

There were no untoward accidents. The reaction was very slight. The rabbit was killed and eye enucleated April 23.

*Tension before operation. Schiötz tonometer.

Day after operation.. *	1	2	5	7	9	12	15	18	22	28	32	35	40	43	46	51	53	59	61	65	71	79	81	
Tension O. D.....	18	12	10	18	18	19	18	18	20	17	18	18	18	15	18	17	18	18	18	20	19	18	19	19
Tension O. S.....	18	17	18	18	18	18	19	19	19	20	19	18	20	18	19	19	20	19	19	20	20	19	19	19

Histologic examination: The scleral incision was filled in with cicatricial tissue, the choroid being caught up in the scar. The ciliary body had become re-attached and as in case two there was practically nothing to indicate the line of separation. The ciliary body and its processes were normal.

The details of other experiments given in the thesis are here omitted.

INFLUENCE OF THE OPERATION UPON THE TENSION.

No. 2. Drop of but 3 mm. for 48 hours after which tension was practically as before operation. Period of observation, 32 days.

No. 3. Drop of 8 mm., reaching former level on fifth day where it remained with the exception of two or three readings. Period of observation, 81 days.

No. 4. Drop of 10 mm. until 12th day when slight increase occurred followed by second drop. Period of observation, 21 days.

No. 5. Fall of 5 mm. during first 24 hours. On the third day the tension had returned to within 1 or 2 mm. of the preoperative level, remaining at this point thruout the period of observation of 78 days.

No. 6. Drop of but 5 mm. until sixth day after which time the tension was practically the same as before operation. Period of observation, 30 days.

No. 7. Drop of 5mm. in 24 hours,

remaining till sixth day after which tension gradually increased to within 2 to 3 mm. of former level and remained almost constant till end of 69 day period.

No. 8. Drop of 3 to 4 mm. for one week, then rise to preoperative level during second week after which second drop of 3 to 5 mm. occurred lasting till 29th day. From then on till end of 77 day period the tension was as before operation.

No. 9. Fall of 5 mm. until the fourth day at which time the tension rose to the preoperative level where it remained with but slight change till the end of 32 day period.

No. 10. There was a drop of 4 mm. during the first 24 hours with irregular readings varying from 2 to 6 points below the preoperative level until the 49th day when the latter level was reached and maintained till the end of the 69 day period.

No. 11. Marked decrease from 19 mm. to 5 mm. during first 24 hours, very gradual rise to former level by 13th day.

No. 12. Tension not recorded during first 24 hours. Second day showed fall of 7 mm. remaining nearly the same until the 13th day when it had returned to the preoperative level. Period of observation, 16 days.

No. 13. Drop of 2 to 5 mm. beginning the first 24 hours and remaining till 19th day, after which preoperative ten-

CHART SHOWING EFFECT OF OPERATION UPON INTRAOCULAR TENSION.

Case No.	Effect on tension	Amt. of decrease	Time of greatest decrease	Period of reduced tension	Permanent effect on tension
2	Decreased	3 mm.	1st 24 hrs.	2 days	Practically nil
3	Decreased	8 mm.	2nd 24 hrs.	5 days	Practically nil
4	Decreased	10 mm.	1st 48 hrs.	7 days	Slight
5	Decreased	5 mm.	1st 24 hrs.	1 day	Slight
6	Decreased	6 mm.	1st 24 hrs.	5 days	Nil
7	Decreased	6 mm.	2nd 24 hrs	11 days	Slight
8	Decreased	5 mm.	4th day	8 days	Nil
9	Decreased	5 mm.	1st 24 hrs.	3 days	Nil
10	Decreased	6 mm.	1st 24 hrs.	21 days	Nil
11	Marked decrease	14 mm.	1st 24 hrs.	12 days	Nil
12	Marked decrease	7 mm.	1st 48 hrs.	15 days	Questionable account short period
13	Marked decrease	5 mm.	1st 24 hrs.	16 days	Nil
14	Marked decrease	8 mm.	1st 24 hrs.	10 days	2nd drop 3rd week Questionable account Uveitis
15	Marked decrease	20 mm.	1st 24 hrs.	Entire period of observation	Questionable account short period

sion was reached and maintained till end of 56 day period.

No. 14. Tension not recorded first 24 hours. Second day showed drop of 8 mm. By 11th day preoperative mark was reached and maintained till 22nd day. Tension again gradually dropped 3 to 4 mm. and remained so till end of 47 day period.

No. 15. Marked drop from 25 mm. to 5 mm. in 24 hours. On fourth day it had risen to 16.5 and remained at this point till the end of the 14 day period.

As will be noticed from the foregoing notes and the accompanying chart the tension was reduced in every instance. The drop in tension occurring in all cases, with the exception of two, during the first 24 hours, in one of the remaining cases the second 24 hours, and in the other between the second and fifth day.

The amount of reduction varied 2 mm. to 20 mm., the average being 5 5/7 mm. In the majority of cases the reduction was from 6 to 8 mm.

The period of reduced tension varied from 24 hours to 16 days, with the exception of case 14, in which the uveitis may have caused the second drop during the third week.

It is of interest to note, at this time, the tension of the eyes in the series before operation, as well as the comparative reading in the nonoperated eyes. In the former the tension ranged from 18 to 22 mm. with the exception of two eyes, one of which registered 17 mm., the other, 25 mm. Nine eyes registered 18 mm., 5 registered 19 mm., 10 registered 20 mm. and 2 registered 22 mm. The average tension being 19 11/28 mm. as to the nonoperated eyes the readings varied within very small limits, seldom more than 2 points. This differs considerably from the tension of rabbits' eyes as found by Boyden (6) who gives as the normal 24 to 26 to 27 mm.

Reviewing the histologic findings we found the scleral incisions readily healed usually with cicatricial tissue in the wound.

There was a firm reattachment between the ciliary body and the sclera with no evidence of a permanent filtration

path, fistulous openings or delicate cicatrices to permit of permanent drainage.

Evidence of atrophy of the ciliary body or processes was not noted altho it is logical to expect it.

There were anterior synechiae in five cases. In each case small, not involving the root of the iris, and apparently not influencing the tension.

In six cases there were small corneal opacities near the limbus located in the substance of the cornea as determined by the slitlamp. With exception of *No. 2* they were very faint and scarcely noticeable. The tendency was to disappearance.

The histologic examination of the eyes which were operated immediately before enucleation was as follows:

Rabbit No. 2. The line of separation of the ciliary body and sclera was distinctly seen containing a small quantity of blood. The parts were lying in close apposition with no evidence of injury to the ciliary body or endothelium of the cornea.

Rabbit No. 6. There was no damage sustained by the tissues other than that necessary to cause the separation of the tissues. There was no blood in the wound.

Rabbit No. 8. Apparently there was but little damage done to the tissues; however, the path of separation contained blood and hemorrhage was also present in some of the ciliary processes. Descemet's membrane had been detached from the corneal stroma instead of having been penetrated by the spatula.

Rabbit No. 10. In this specimen there was no evidence of damage to the tissues with the exception of damage to Descemet's membrane which had been detached for a short distance before it was penetrated.

Rabbit No. 11. Separation had been accomplished with but little trauma. There was no evidence of hemorrhage. Descemet's membrane was not injured.

Reviewing the literature concerning experimental works in cyclodialysis done upon animals and microscopic examination of human eyes in which the operation was not successful we find:

"Wichodzeff" operated 14 times upon dogs and 8 times upon rabbits and found

pupil changes immediately after operation only when the aqueous escaped. After a few hours the normal tension and normal width of the pupil were restored. Microscopic examinations were made of the eyes enucleated at varying times after operation. In order to determine whether cyclodialysis produced a communication between the anterior chamber and the suprachoroidal space, he made an injection of soluble Berlin blue into the anterior chamber several hours before the enucleation. Under the microscope he found ordinary tears in the processes of the space of Fontana, detachment of Descemet's membrane and in several cases broad attachment of the iris periphery and the denuded corneal stroma.

"Detachment of the ciliary body and choroid from the sclera was never observed, nor was there ever any Berlin blue in the suprachoroidal space. He therefore concluded that by cyclodialysis no new paths were opened for draining the aqueous, but on the contrary the usual paths were partly occluded by deformation of the chamber angle. He could not therefore recommend the operation altho he recognized the fact that the results of his experiments could be applied only with some reservations to the glaucomatous eye."

Judin⁸ reported his results of 26 experimental operations on dogs' eyes. The intraocular pressure was measured by Maklakoff's tonometer and showed a decrease of an average of 9.3 mm. Hg. after a lapse of 9 to 10 days. In the course of four weeks tension returned to normal (30 to 32 mm. Hg.). Fifteen eyes were examined anatomically at varying intervals after operation. At the end of the third week the scleral wound was healed with the formation of a firm connective tissue scar. There was no instance of detachment of the ciliary body from the sclera, but on the contrary the former was drawn into the wound soon after the operation; both were firmly adherent. In the region of the operation the trabeculae of the ligamentum pectinatum were united by

firm connective tissue adhesions and in almost all the cases there was detachment of Descemet's membrane. Judin therefore does not believe that the operation will replace the earlier methods of treatment.

"Krauss² operated upon 20 eyes of rabbits and 12 eyes of cats. The results were the same in all.

"1. In all cases a solid cicatrix had formed at the site of operation.

"2. The vitreous occasionally showed here, and between it and the ciliary body slight fibrous bands.

"3. The choroid was always tightly adherent to the sclera.

"4. The ciliary body was fixed to the sclera by scar tissue and the ciliary processes were thickened by cicatrices or atrophic.

"5. The iris occasionally appeared atrophic in the region of the detachment and always was adherent to the cornea.

"6. The sinus of the anterior chamber was in all cases obliterated. The base of the iris was always adherent to the cornea by cicatricial tissue extending far forward.

"7. The anterior chamber at the side of the cyclodialysis was more shallow and in the sinus fibers and leucocytes were found.

"8. The cornea showed detachment of the endothelium and Descemet's membrane, which not infrequently had happened at the operation. A lasting opacity followed these in some eyes."

"Wernicke⁴ did experimental investigation on rabbits and dogs. He states the effects were not comparable to that in humans. No dense scars could be found, however, opposite the wounds, and while no open communications could be found between the anterior chamber and the suprachoroidal space, this may be due to fault in preparation, the result of shrinking. In human eyes examined pathologically there was no more atrophy of the iris and ciliary body on the side where the operation had been made than at the site of an iridectomy."

In one case of hemorrhagic glaucoma operated by Axenfeld in which the eye was later secured for micro-

scopic examination there was no sign of a communication between the anterior chamber and suprachoroidal space, and at the place of operation the anterior chamber was shallower than elsewhere and the adhesion between the iris and cornea more extensive, the ciliary body was atrophied and adherent to the sclera so that the space made by the stylet at the time of the operation was obliterated.⁹

Meller⁹ has shown microscopic sections of eyes in which the operation was not successful. They showed freeing of the angle, detachment of Descemet's membrane and injury to the vitreous. The scar appeared as a narrow line of scar tissue which apparently was not capable of filtration.

CONCLUSIONS.

From the foregoing studies we arrive at the following conclusions:

(1) Cyclodialysis is an operation which will reduce intraocular tension.

(2) The reduction in tension is but moderate and only temporary.

(3) There is no evidence of a filtration path or other means of drainage in the suprachoroidal spaces after the first few weeks.

(4) There is apparently no atrophy of the ciliary body.

(5) The reduction in tension other than that caused by the evacuation of the anterior chamber, is due to the formation of a temporary drainage canal, between the ciliary body and the sclera, connecting the anterior chamber and the suprachoroidal spaces.

(6) The tissues reunite in close apposition soon after the operation thus

closing the temporary path of filtration and preventing further drainage after which time the tension rises and tends to approach the preoperative level.

(7) The principal immediate complications, other than hemorrhage or that due to improper technic, is detachment of Descemet's membrane with difficulty in or failure in entering the anterior chamber. Injury to Descemet's membrane is followed by corneal opacities which may or may not tend to disappear and by anterior synechiae which are permanent. While these anterior synechiae may be of no consequence in an eye with normal tension they may have a great influence upon the tension of a glaucomatous eye.

(8) It would seem that the facts obtained in these experimental studies are in accord with the general clinical experience, that is, that the effects of the operation are moderate and only temporary; that it is not free from danger or complications, that it is not founded on sound surgical principles and that it is not only not the operation of choice for reduction of tension in glaucomatous eyes but is of practically no value, even in the very type of cases in which it is ordinarily done.

I desire to thank Dr. Luther C. Peter for suggestions and criticism of my work; Dr. John A. Kolmer whose cooperation enabled me to carry on the experiments; Miss Elizabeth Arthur for suggestions and assistance in the preparation of the specimens and Dr. Eugene A. Case for assistance in determining the histologic findings.

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ADVANTAGES OF PLANO TRIAL LENSES.

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Spectacle lenses are practical compromises between incompatible ideals. Lens strength, eye movements, pencils of rays to be focussed and position of work must all be considered. Plano lenses, with convex side from the eye or concave side toward it, are much nearer the ideal than the biconvex and biconcave commonly found in trial cases. They are most serviceable for testing spectacles by neutralization being applicable to all forms. Read before the American Ophthalmological Society, May, 1926.

For theoretic simplicity a perfect lens would have all its refraction in one plane. It would focus all the rays of a pencil at a single point. For every

The relation of a spectacle lens to the eye can be ideal for only one direction of regard, one distance of the lens from the eye, one divergence of the

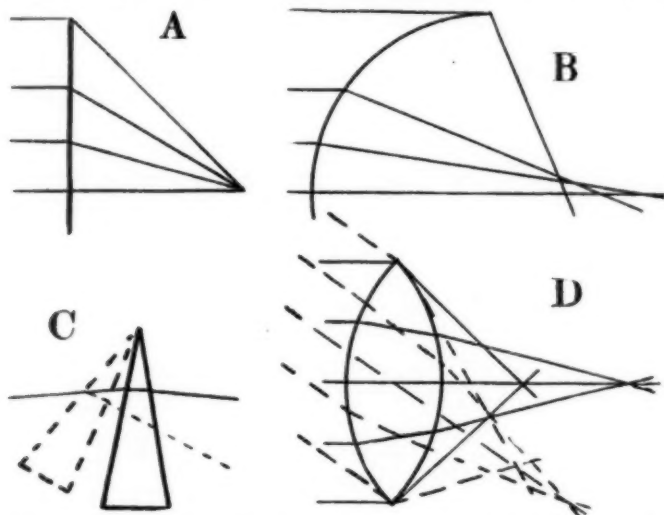


Fig. 1. A. Ideal lens. B. Actual lens, showing spherical aberration. Peripheral rays focussed closer to lens. C. Prism. Solid lines show position of minimum deviation. Broken lines same prism rotated about its edge showing increased deviation. D. Focus for oblique rays, shorter than for rays parallel to axis of lens.

ray of the pencil its distance from the axial ray would have the relation of the tangent of the angle of deviation to the focal distance taken as radius. In a word, the theoretically perfect lens is a metaphysical conception, incompatible with the basic laws of refraction. An actual lens cannot be a plane but must have thickness. The practical focussing of a lens cannot be produced by a plane surface but by a curved surface. The relation of distance from axial ray to focal distance is in general not that of tangent to radius. A lens does not approach theoretic performance except as it is perpendicular to the incident pencil and the pencil small. See Fig. 1, A.

rays of the incident pencil, one adjustment of the accommodation. For every one of these ideal adjustments, there are an infinite number of departures from the ideal, which it is impossible to meet in practice by changes in the shape and placing of the lens before the eye. The practical use of lenses rests on the practical adjustments of compromise. In the choosing of lens shapes and positions, next to the basic laws of refraction comes the law of compromise—to gain the most of advantage at the least expense of effort, or of sacrifice of accuracy and convenience. Some of the departures from the ideal are shown in Fig. 1, B and D.

Our trial glasses should be so shaped that they will best approximate the ideal form; for all kinds of eyes, looking at all distances, in all directions; and at the same time shall preserve the unity and adaptability of the most simple system, and easily to be brought into exact relations with each other and the lenses prescribed for each individual patient. The trial set constitutes the connecting link between the scientific investigation of the ocular refraction and the practical cor-

rection of it. Taking into account all the things our trial lenses are to do, the plano form of lens is a much better compromise than any other.

In 1887, I exhibited before this society a trial set of plano lenses, made by the American Optical Company for Queen and Company of Philadelphia, which set, with other sets made by the same company, I have used ever since. But the importance of the advantages of the plano form have not been so widely appreciated as they should be. It seems worthwhile to call attention to them at this time, when the attempt is being made in several countries to reach a rational, serviceable basis for

the designation of lens strengths in general; because the plano lens seems to furnish the best basis for any such system. Spectacle lenses are generally required to act on pencils of rays that come from relatively distant objects, rays approximately parallel. If the modification of the convergence relations of the rays is slight, the form of the lens is not important. If it is great, the plano lens is superior, in that it comes nearer to fulfilling the require-

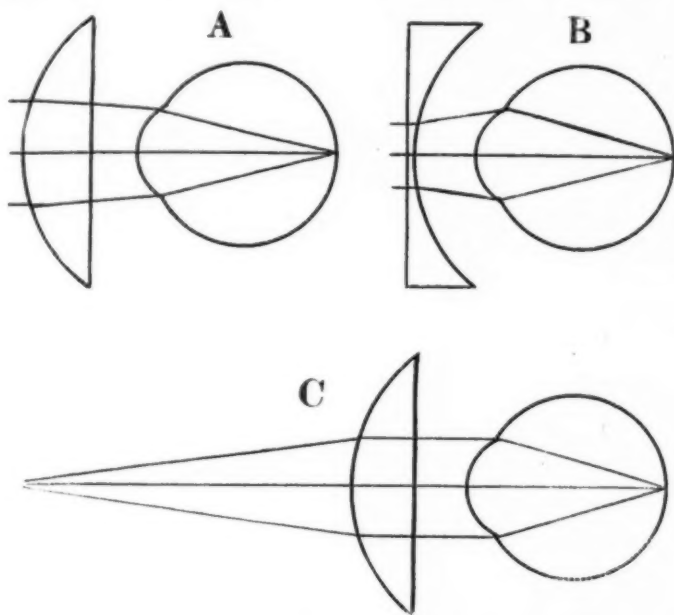


Fig. 2. Proper facing of plano lenses placed before eye. A. Convex. B. Convex for distant vision. C. Plano convex for near vision. Lens surfaces approach position of minimum deviation.

ments of an ideal shape, than do other forms. This is illustrated in Figure 2. It is desirable to reduce spheric aberration to a minimum. The theoretic minimum is only attained by having the lens of a shape exactly adapted for the particular divergence of the incident rays, but it is closely approximated by the plano lens.

The eye cannot look always along the principal axis of its correcting lens, unless the lens can change position with every change in the direction of the gaze. But the plano lens, mounted with the convex surface turned from the eye, or the concave surface turned toward the eye, furnishes the practical

compromise which approximates the ideal meniscus form. This is illustrated in Fig. 3.

The effective strength of a correcting lens must be estimated for a certain distance of the lens in front of the eye. For strong lenses this distance should be accurately measured from the vertex of the cornea. In the plano lens with its specific effect on the convergence or divergence of the rays of the incident pencil, all produced at one surface, the measurement of the distance of the lens from

nished by the optician correspond to the prescription for them based on the tests with the trial lenses. Thirty years ago the travelling man of a wholesale optical house was asked by a customer: "Why do you not furnish us trial sets in which the convex and concave lenses will neutralize each other?" A few months later he came back with a trial set in which they would neutralize. Since then this desired result has been reached, not by making lenses in the plano form in which lenses having the same curve will neu-

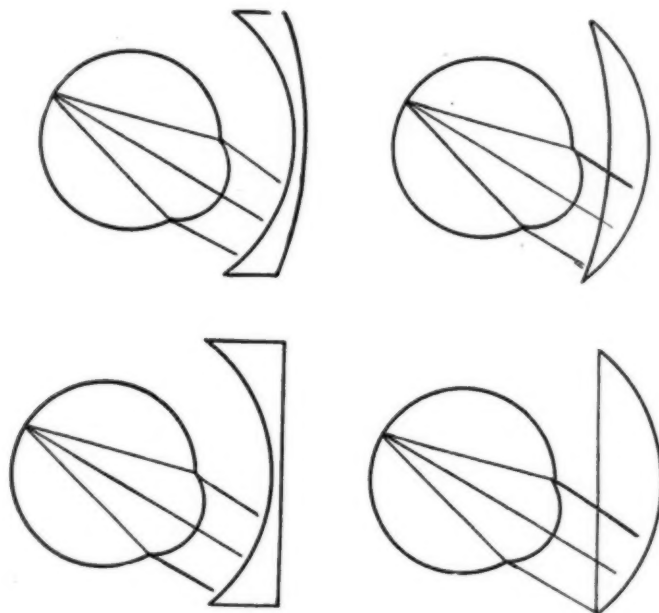


Fig. 3. Meniscus and plano lenses properly placed before the eyes; to show effect when eyes are looking obliquely downward.

the eye becomes reduced to its simplest form. This can be seen from Fig. 3. The distance of the vertex of the curve of a convex lens turned from the eye is most easily measured. The distance of the plane surface of a concave lens may be measured and then the thickness of the lens at its vertex determined with calipers. But the thickness of the concave lens at the vertex of its curve is so slight, (less than one millimeter for a well ground lens) that the difference may generally be disregarded, for all practical purposes.

An important use of trial lenses is to test, by neutralization, if the glasses fur-

tralize perfectly; but by making them of different strengths so that they would neutralize when two of their surfaces were separated by the sum of the thickness of the glass in the two lenses.

In biconvex and biconcave lenses, two of the surfaces are accurately applied and the other two separated by the thickness of the two lenses. With plano spheric lenses the curved surfaces can always be perfectly applied to each other for neutralization, the plane surfaces having no effect on the focussing, however far they are separated. Plano cylindrical lenses have always been furnished in the trial sets. The way that

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plano lenses should be applied for neutralization is shown in Fig. 4. Not only can plano lenses be neutralized by plano lenses, but biconvex and biconcave, and converging and diverging meniscus lenses, can be perfectly neutralized by them. For the bilenses a plano of the

with any other lens, except a corresponding toric of opposite kind. The inaccuracy of the plano spheric neutralization, due to the slight separation between the spheric and toric curved surfaces, corresponds only to the strength of the cylindrical effect, which in the great ma-

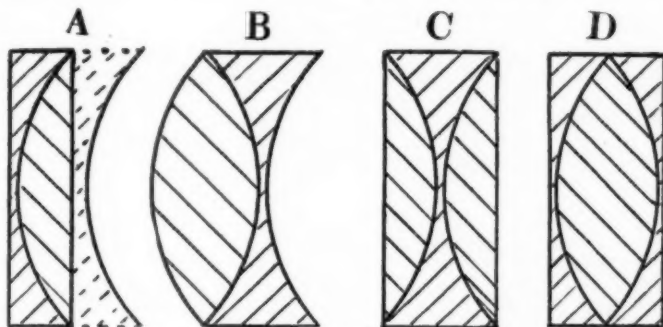


Fig. 4. Neutralizing with plano lenses. A. Convex plano neutralized by concave; solid lines properly placed; broken lines improperly placed. B. Biconvex neutralized imperfectly by biconcave lens. C. Biconcave neutralized by two plano convex. D. Biconcave neutralized by two plano concave lenses.

opposite kind and half the strength is applied to each curved surface. For meniscus lenses planos of the same curves of opposite kinds are applied to each of the unequally curved surface; and again the result is a mass of glass

majority of correcting lenses does not run above 6 D. causing a slight and unimportant inaccuracy in neutralization. This inaccuracy of contact is illustrated in C. and D. of Fig. 5.

Of late years, efforts have been made

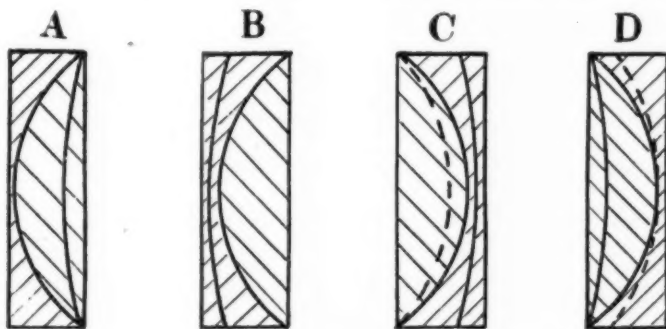


Fig. 5. A. Convex meniscus, neutralized by stronger plano concave and weaker plano convex. B. Concave meniscus, neutralized by stronger plano convex and weaker plano concave. C. Toric concave meniscus, strongest curve perfectly in contact. D. Toric concave meniscus. Broken line shows weaker curve which can be perfectly neutralized.

with curved surfaces in perfect contact and bounded externally by plane surfaces on both sides. See Fig. 5.

Of late years lenses having toric surfaces have been largely used. These cannot be perfectly neutralized by plano lenses because the spherical and the toric surfaces can only be brought in actual contact in one principal meridian. But neither can they be as nearly neutralized

to eliminate the most serious defects of correcting lens by using curves especially calculated, for strength of the lenses required, their position before the eye, the conditions of seeing obliquely thru them. Such lenses are a boon to those who use them. The particular value of the plano lenses is that they approach much more closely to the ideal lens than do the most of those that are now in

common use. This is well shown in Fig. 6 used by Henker (Introduction to Theory of Lenses). To prove the real value of "punktal" and "katral" lenses, he has photographed test letters with lenses placed at varying degrees of obliquity to the incident rays, thru bispheric, meniscus spheric of the best form and punktal lenses. The images thus secured are reproduced in Fig. 6. For the best form of the 14 D. lens used in this ex-

field, the visual axes are turned toward it, first by the action of the muscles attached to the eyeball. But when the visual axis has been moved thru an angle of 10° to 15° from its original position, the position of the head and trunk begin to be changed in a similar direction. So that in the end, the deviation of the visual axes from the median plane of the head is practically always less than 20° ; and any turning of the head brings



Fig. 6. Letters photographed thru 14 D. convex lens. Degree of obliquity on left. Column a biconvex lens. b Best form of meniscus, practically plano convex. c "Katral lens."

periment meniscus is very close to the plano spheric; which could have been used without any perceptible change in these images.

It is to be noted that only when the obliquity of the axial ray approaches 30° is the aberration great enough to seriously disturb the distinctness of the image. With the ordinary trial lens, 37 mm. in diameter, before the eye, its anterior surface 13 mm. in front of the anterior surface of the cornea, 23 mm. in front of the center of rotation of the eyeball, the greatest departure possible of the visual axis, from the perpendicular to the lens surface at its optical center, is 35 degrees. But the departure of the eyes from the ideal position in ordinary use is much less than this.

A large number of recorded observations show that when attention is attracted to an excentric point in the visual

a corresponding turning of the glasses worn. This is irrespective of any blurring of images formed by oblique pencils. A person with very strong glasses can easily move his head so that the obliquity for macular vision need never go above 10° .

It is possible to get with plano trial lenses close approximations to the best results obtainable with lens surfaces specially calculated to reduce aberrations to the minimum. It is easy with them to determine the vertex refraction, to measure the exact distance of the lens surface in front of the eye, to keep down close to the minimum spheric aberration and distortion of pencils by obliquity, and to measure by neutralization the strength of lenses of different forms. They should be universally employed as trial lenses.

217 Imperial Bldg.

NOTES, CASES, INSTRUMENTS

BILATERAL CONGENITAL COL- OBOMA OF THE EYEBALL.

ARTHUR M. YUDKIN, M.D.

From the Section of Ophthalmology, Department of Surgery, Yale School of Medicine.

W. B., a male, seven years old, born of parents who have no pathologic ocular condition and have no knowledge of any eye trouble in either branch of their family, presents a bilateral coloboma of the ocular tissue. The lesion of the iris is downward and inward on both sides.

In the left eye there is a frail bridge of iris which crosses the coloboma at the circulus arteriosus iridis minor. Both lenses are notched in this area and show an incipient peripheral posterior cataract which does not obscure the view of the fundus. The choroid, retina and optic nerve are involved in both eyes, but more marked and extensive on the right side. The retinal vessels are present and the choroidal blood supply is missing in the coloboma.

There are no signs of any active or chronic inflammatory processes in the rest of the fundus. The edges of the lesion are well marked and slightly more pigmented than the remainder of fundus. It is questionable whether the ciliary body and processes are involved. An examination of this malformation with the slit lamp microscope gives no added information. The vision in the right eye is 5/200, in the left, 8/200, and is not improved by correcting the error of refraction. He also has a patent foramen ovale of the heart. The patient was operated on for bilateral congenital inguinal hernia.

It would appear from a study of this case, that typical congenital coloboma develops as a result of failure of closure of the fetal ocular cleft, rather than due to any inflammatory process in the fetal tissue, as advocated by Deutschmann and others.

257 Church St.

SCISSORS MAGNET EXTRACTION OF A FOREIGN BODY IN VITREOUS.

WILLIAM C. FINNOFF, M.D.

DENVER, COLORADO.

The removal of foreign bodies from the posterior segment of the eye offers difficulties that are not encountered when they are located in the anterior portion of the globe. If the foreign body has been in the eye for some time the difficulty increases, because of the tendency for the formation of fibrous tissue, and the encapsulation of the foreign particle.

In some cases it is impossible or inadvisable to attempt to extract the foreign body with the giant magnet by the anterior route, and the approach must be made from behind. In the latter case it is sometimes difficult to drag the foreign body to the desired position for extraction, because of its anchorage by scar tissue. If one persists with the giant magnet, great mutilation of the parts might occur.

Jackson, in "Scissors-magnet Extraction of Iron from Eyeball" (Jour. Amer. Med. Assn., 1909, v. 52, pp. 156-162), calls our attention to the use of steel scissors, with the cutting ends bent at an acute angle from the shank, which can be inserted and opened while the magnet is applied to the scissors joint in such a manner that the line of magnetic force is in the direction of the opened scissor blades. The effect of turning on the current is a traction of the foreign body with its fibrous covering toward the open scissor tips, which are in front of the magnet. The space between the scissor blades becomes occupied with fibrous tissue, which bows toward the magnet tip, and by closing the blades while the current is turned on the engaged tissue is cut thru; with successive snips of the scissors, the foreign body is finally reached and drawn thru the wounds as it clings to the tips of the scissors.

The usefulness of this procedure was demonstrated in a case which I saw

first on October 11, 1926. The man, an Italian laborer, had received an injury by a flying fragment of steel, which perforated the sclera of the right eye at the limbus in the horizontal meridian on the nasal side. It perforated the base of the iris, evidently missed the equator of the lens, as no signs of opacification of the border of the lens could be discerned when the pupil was widely dilated—and lodged 2.5 mm. on the nasal side of the vertical plane, 6.5 mm. behind the cornea, and 8 mm. below the horizontal plane. The missile measured $1 \times 0.5 \times 0.5$ mm. It had been present in the eye for one year, lacking eighty days, and a typical deposit of iron salts had occurred in the crystalline lens and iris. The siderosis bulbi and gradual loss of vision called the patient's attention to the affected eye.

X-ray examination revealed a foreign body and the above localization was made at the time of its extraction.

A large conjunctival flap was dissected inward from the median line and the sclera was laid bare. A $1\frac{3}{4}$ or 2 mm. incision was then made thru the sclera between the inferior and internal recti muscles, as near to the foreign body as possible. The magnet was then applied and the current turned on and off several times without results. The Jackson scissors were then inserted and after four or five snips, the foreign body was seen clinging to the closed scissor tips. The wound was closed, as no vitreous presented; and the conjunctival flap was sutured into place. The recovery was rapid and uneventful.

217 Imperial Building.

CONGENITAL ANOMALY OR PRODUCTIVE RETINITIS.

CLARENCE LOEB, M.D.

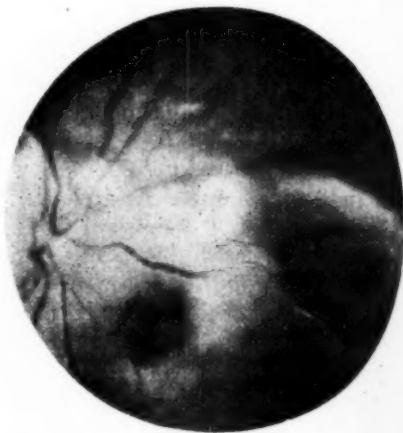
CHICAGO.

(Demonstrated to the Chicago Ophthalmological Society, Dec 20, 1926.)

D. S., female, came to the Michael Reese Dispensary April 17, 1925, with the complaint that her glasses were no longer satisfactory; also stated that

she never could see with her right eye. Externally, the eyes were normal except that the right pupil was larger than the left. Both reacted to light and accommodation. V. O. D. = 0; V. O. S. = 20/200.

The right fundus showed a white area occupying the usual location of the disc, about 2 d. d. in diameter, roughly circular in outline with irregular margins, shading gradually into the rest of the fundus. From the center of this rose the central retinal vessels, but there was nothing to indicate the limits of the disc. At the nasal side of the area was a red spot



Photograph of fundus in case demonstrated by Dr. Loeb.

which looked like a hemorrhage. This, however, was composed of intertwined small blood vessels, there being no free blood. Downward and nasally, it extended in the form of a white line about 2 d. d. where it met another white line composed of white spots, curving upward and nasally. With a strong plus lens, numerous small blood vessels were seen over this area, as tho the retina were detached but still transparent, or as tho they were in a transparent membrane lying out in the vitreous. The left disc was pale, small, irregular in outline, evidently atrophic.

Both eyes had fairly high hyperopic astigmatism. With $+3.50 \text{ C} +1.5 \text{ ax. } 100$ V. O. S. = 4/10. No improvement in right. There had been practically no change in the fundal picture since

first seen. However, vision in the left eye had decreased to 1/100. The history gave no etiologic clue except that she had been treated for tuberculosis. Wassermann was negative.

The right fundus might represent a congenital anomaly, or might be the result of a productive retinitis, with a tuberculosis as its basis. In view of the optic atrophy of the other eye this is the more probable diagnosis, but it was a very unusual picture for a productive retinitis.

25 E. Washington.

SOEMMERING RING LUXATED INTO THE ANTERIOR CHAMBER.

C. O. SCHNEIDER, M.D.

CHICAGO.

I have the privilege of presenting a case of Luxation of an Annular Soemmering's Crystalline Swelling into the



Fig. 1. Soemmering ring luxated into anterior chamber. Case of Dr. Schneider.

Anterior Chamber. The patient, Mr. Jacob Klein, age 50, a sheet metal worker, presented himself to us on the Dr. Dwight Orcutt service of the Illinois Eye and Ear Infirmary during the preceding month. He complained of the sudden extraordinary appearance of the right eye that happened about two weeks before. There was no history of trauma and he did not know exactly when or how it occurred. Others first drew his attention to its peculiar appearance. Heretofore both eyes looked almost exactly alike.

Examination revealed that the left eye was normal in every way, vision = 20/20. The right eye was not inflamed, the cornea and aqueous were clear, and loosely floating about in the anterior chamber was a large white annular bisected mass, sausage like in appearance, extending from the pupillary space almost to the outer circumference of the iris and thus forming a



Fig. 2. Diagram of sections showing Soemmering ring K, in original position.

ring nearly completely covering the iris. Attached to this in the center, and covering about the outer and lower third of the pupillary space, is a membrane of varying density, the usual remnant of the posterior capsule of the crystalline lens, after a cataract operation. The remaining two-thirds of the pupillary space is clear and a good view of the fundus could be obtained. With a correction of +8.00C +.50 ax. 60 vision = 20/40.

The history reveals that twenty years ago the right eye gradually became blind and a cataract operation was at that time performed by Dr. Goldzieher of Buda-Pest. He was in the hospital about eight days and no secondary operation or needling was subsequently done. He remembers that inquiry at that time elicited no trauma or known injury to the eye to account for the development of the cataract in this man then only 30 years of age.

It is interesting to note, however, that with the slitlamp Dr. Von der Heydt discovered a minute scar ex-

tending thru the cornea, at a location near the periphery, at about 5 o'clock. This we assume is undoubtedly the point of entrance of a small foreign body, 20 years ago, that also penetrated the lens and caused the formation of the cataract.

During cataract extraction it often occurs that only a central part of the anterior capsule is removed, allowing only an exit for the lens nucleus. The retained peripheral cortical masses may be completely covered by capsule, so that they can not be influenced by the solving action of the aqueous. This imprisoned cortical material, together with proliferating capsular epithelium, may produce a sausage shaped mass, or a more or less complete ring. This structure was probably first described by Soemmering, an oculist of Mainz, who wrote a comprehensive book on Ophthalmology about one hundred years ago. This ring is seldom seen, as when present, it is normally held in position behind the iris, by the zonular fibers of the lens. In extremely rare cases, this mass may be luxated into the anterior chamber.

Search of the literature has revealed only one other similar case. At a meeting of the Berliner Ophthalmological Gesellschaft of Jan. 26, 1911, C. Adam reported the luxation of a Soemmering ring into the anterior chamber. This patient fourteen years previously had had a cataract operation. He was then 48 years old. The cortex was reported as still relatively soft. A year preceding his report, a Soemmering ring luxated into the anterior chamber. Vision was reduced to fingers at two meters. After a week the ring returned to its normal position, behind the iris, spontaneously. When this case was reported the Soemmering ring had again luxated into the anterior chamber. He reported some reduction in vision and tension. Wessely and others have reported cases of luxation into the vitreous.

In addition to showing the patient, I am presenting stereoscopic photographs of this rare and interesting condition taken by Dr. Robt. Von der Heydt, and I wish also to reproduce

a diagram taken from a recent edition of Fuchs, of a Soemmering's Crystal-line Swelling, in its normal position behind the iris. (Fig. 2.)

The eye has since been operated and the mass removed. The ring could not be delivered en masse thru a large keratome incision without tearing it to pieces, because it was so firmly attached in several places, probably by zonular fibers. The contents of the sausage like structure was a milky fluid.

Presented at a meeting of the Chicago Ophthalmological Society, Dec. 20, 1926.
31 N. State St., Chicago.

OSSIFICATION OF THE CHOROID.

DR. G. N. BRAZEAU,
MILWAUKEE, WIS.

Like most of the cases of this kind, this one was discovered only after an examination of the enucleated eyeball. The operation was done to relieve pain in and about the eye and in the forehead. The patient, a woman of fifty-four years of age, had been blind since the age of fifteen from an old iridocyclitis. These calcareous changes in the eye have no symptomatology peculiar to themselves, that would permit of their diagnosis in any other way. I could not understand why pain should be present in the absence of all symptoms of reaction, but because no other cause could be found it was thought best to operate, and to our great satisfaction all symptoms were relieved.

Calcareous changes, like these, do not follow any special rule, therefore, they may appear either as isolated islets or they may involve the tissues of the eyeball, as we will see they did in this case. The little that was left of the vitreous was encased by the osseous mass. Macroscopically the eye was reduced in size, hard to the touch, and irregular in shape. The cornea was enlarged and transparent, up to the part usually occupied by the arcus senilis, which, by the way, was very

opaque. The region of the optic nerve was surrounded by a shoulder like thickening, cartilaginous to the touch. This part of the eyeball is where ossification usually begins, preparatory to involving the rest of the eye. The anterior chamber was very deep, with the iris funnel shaped and tightly adherent to the opaque lens; which had been drawn backward by the retracted intraocular mass. Contrary to my expectations, the tension of the eye was low.

Pathologists report that ossification results from colloid degeneration of

the intraocular tissue, which is very avid of water. As it swells the degenerated mass takes on calcareous salts from the osmotic streams which traverse it, and precipitates them. Later on, the mass undergoes further degeneration with calcareous incrustation, between the striae of which the sclerosed conjunctival tissue organizes itself into new medullary tissue; just as the fibrous membranes do in the regular process of ossification, in which veritable osteoblasts are born and with them true osseous tissues.

720 Majestic Bldg.

SOCIETY PROCEEDINGS

THE ROYAL SOCIETY OF MEDICINE.

Section of Ophthalmology.

January 14, 1927.

MR. ERNEST CLARKE, C. V. O.,
President.

Sarcoma of the Orbit.

MR. COLE MARSHALL removed a growth last November from this boy. It had recurred when he next presented himself, after Christmas, the situation being the upper and outer angle of the orbit. It now had the appearance of sarcoma, and that the microscope confirmed. Mr. Marshall asked whether exenteration of the orbit should not now be done; there was a bruit audible over the growth, and that might add to the gravity of the operation.

Discussion. MR. J. H. FISHER recommended clearing out of the orbit, and that without much loss of time. Otherwise the globe would probably be much displaced and sloughing of the cornea might follow.

MR. MONTAGUE HINE spoke of a case he had of similar nature. It proved to be an endothelioma, and after it had been removed there was a recurrence, with rapid extension, so that during a three weeks' delay in getting the patient into the hospital the growth had indented the eyeball. A very grave view was taken of the case at the consultations

held on it, but Mr. Hine did an exenteration and followed this with eight applications of roentgen rays applied deeply. So far there had been no recurrence, and the boy's health to date had remained good.

Crystals of Cholesterin in the Anterior Chamber.

MR. B. CRIDLAND showed a patient whom he first saw in 1913, when an eye had been faulty six years and was the seat of retinitis proliferans, with extensive retinal detachment. In 1919 when he again saw the patient, the eye was blind. Then in October, while cycling, the man was struck in this blind eye, and one morning two months later, he awoke with great pain in the eye which lasted some hours, and next morning it showed the cholesterin crystals now seen. The patient's blood cholesterin was 211, a high figure, but not pathologic.

Discussion. MR. HUMPHREY NEAME spoke of a similar condition in an eye which had been sent to him.

Dermoid Tumors in Both Eyes.

DR. DAVID WILSON showed a case of this kind in a girl, aged 13, who also was born with a supernumerary auricle, and it was suggested that both abnormalities were due to the pressure of amniotic bands at or before birth.

Foreign Body in Vitreous.

MR. J. W. TUDOR THOMAS showed a case of foreign body in the vitreous.

The patient was a woman, aged 26. He first saw her a month ago, when she said that five months previously she was standing near a man who was chipping the top of a stone wall, when a piece struck her right eye, and the eye bled. It remained red for three weeks, during which time she treated it with boracic lotion. Previous to the accident she had noticed a black streak before the eye. It did not now cause her much discomfort. The vision in that eye was now the same as it was when first seen, i. e., 6/12 partly, with correction 6/12; left eye 6/12 partly, with correction 6/9. The right eye showed traumatic mydriasis, and there was a small scar in the conjunctiva and sclera 2 mm. from the cornea on the inner side. In the lower and anterior part of the vitreous was a minute foreign body, opaque to roentgen rays, and near it a faint web of localized opacity. On the outer side of the macula was an area of choroidoretinitis, and a scotoma extending from 15° to 40° to the nasal side of the fixation spot, and vertically, from 5° to 60° below the horizontal plane. Higher in the retina was a very small pigment spot and a small hemorrhage. There was no sign of iritis nor siderosis, tho the foreign body contained iron. The foreign body took on a twisting movement when a large horse shoe magnet was brought to the lower eyelid, and the exhibitor said that on general principles perhaps the foreign body should be removed, but possibly the patient was better off in her present state, temporarily at least, than after incision of the sclera. A question arose as to how the somewhat extensive choroidoretinal change was produced. Did the foreign body strike the retina at this spot and rebound into the vitreous? If so, was the impact on the retina the cause of the fundus picture? Owing to the area involved he thought it likely the changes were produced by a transmitted force acting thru the vitreous. The foreign body did not measure more than 2 mm. each way, and was of such light weight that it remained suspended in the vitreous, and in five months had

not gravitated to a more solid resting place on the retina.

Discussion. MR. M. H. WHITING thought it was not at all rare for an eye having a foreign body in it to remain quiet for a considerable time afterwards. He advised removal of this foreign body by means of a magnet.

MR. B. CRIDLAND thought the foreign body should be brought round the edge of the lens into the anterior chamber and removed from there.

Retinal Petechiasis, a Clinical Entity of Autointoxication.

DR. H. MORELAND MCCREA said the purpose of his paper was to urge that a condition now included under the term retinal hemorrhage—for which group of cases but little could be done—should be regarded as a separate clinical entity, the condition to which he gave the name petechiasis. Mr. Ernest Clarke, the President of the Section, had already made some allusion to the question under the term hemoflux. Dr. McCrea understood by hemorrhage the rupture of a vessel and the escape of its blood into surrounding tissues. Hemorrhage in the retina was seen in people who were past middle life and whose vessels showed marked degenerative changes; their blood pressure was, in almost every instance, high, especially the diastolic. But little could be done for hemorrhagic changes in the retina when the cause was degeneration of vessels. Neither could much be done for retinal thrombosis. A third retinal condition was what he termed petechiasis, and at first this looked like retinal hemorrhage. This, he contended, differed from hemorrhage in the following particulars: it was an exudation of blood without rupture of vessel; its pathology was different from that of hemorrhage, as also were its clinical history and appearance. It required a different treatment and when the treatment was correct, recovery might ensue. Petechiasis was an exudation, but it was difficult to enter into its pathology, as he was not aware of an eye damaged in this way having been

examined pathologically; but the ophthalmoscopic findings afforded a good clue. In typical examples, the disc presented what looked like blood splashes, as if some blood stained mud had been thrown at the retina near the disc. In some patients the splashes were confluent and the vitreous cloudy, thus resembling a true hemorrhage. Sometimes the blood could be seen to traverse the exudation. Krogh, of Copenhagen, had shown that the capillary walls were capable of stimulation, the response to such stimulus being either a contraction or a relaxation; he also showed that increased relaxation meant enhanced permeability to the constituents of blood plasma. Toxins circulating in the blood probably supplied such stimulus, and so splashes were facilitated.

If the view set forth in this paper was correct, it should be possible to discover the sources of infection and to show that their removal arrested the retinal process; also if there were a recrudescence of the infection there should be a fresh retinal manifestation. These conditions had been fulfilled, as he showed in a number of cases, supported by slides. In one case, after treatment the retinal trouble had settled down for about six months, then there was a mild recurrence, and new splashes appeared in one eye. Previously all the patient's teeth had been removed and the tonsils had been examined by experts and accepted as satisfactory. His general condition was good, and there were no evident vascular changes, the blood pressure being still 118-76. On retracting the anterior pillar of the fauces on the left side, pus exuded from the tonsil, and a small abscess was found there. Now that the electric ophthalmoscope was in such general use, he suggested that a routine retinal examination should be made by physicians, as it would result in these splashes being seen earlier, and the offending focus removed. At present the ophthalmologist only saw these cases when defective vision was complained of. The organism mostly responsible for the trouble was a streptococcus,

but in some the bacillus coli was present.

There was a striking difference between the clinical history of petechiasis and hemorrhage. In the former it was not necessary for the high blood pressure accompanying hemorrhagic conditions to be present, and it might occur at any period from middle age onwards; the youngest in his series was aged 42. Also in the hemorrhagic type of case evidences of degenerated vessels elsewhere could be found, but not so in petechiasis. Moreover, for true hemorrhagic conditions there was little treatment, whereas in petechiasis the results of the correct treatment were excellent. If the source of infection did not prove to be removable, vaccines should be tried, tho he had not much faith in them unless the source of infection could be removed. The vaccine used should be cultivated from the patient's own organism. Sources of infection in his cases were the teeth, the tonsils, the accessory sinuses, the ethmoid and the urinary tract. A site of infection which was very liable to be overlooked was a pocket in the alveolus of the lower jaw, behind the wisdom tooth. Mr. Pallant had pointed this out.

Summarizing his fourteen cases of the condition, Dr. McCrea said their ages ranged from 42 to 83, and their blood pressures were rather on the low side. One case only had any degree of albuminuria, none had polyuria. Marked improvement followed treatment in ten cases, moderate benefit in two, no improvement (but relapse) in two.

Discussion. DR. G. A. SUTHERLAND said he was not familiar with this condition, and it was a relief to find a condition of the kind which was not attributed to high blood pressure. The "splashes" might be associated with degenerated vessels, but, on the other hand, the vessels in a particular case might be apparently sound. Still, even tho the larger vessels might appear normal, there might be a disease of the capillaries which accounted for the oozing. The distinction made by the reader between real hemorrhage and

petechiasis required to be thought over. If, as Dr. McCrea said, this condition he had described was a clinical entity, presumably it was also a pathologic entity, in which case more particulars were required as to the specific cause; only streptococci and *B. coli* had been mentioned. There was nothing peculiar in a lesion being limited to a particular part of the body, in this case the retina; it was the kind of selection of site which occurred in a number of diseases. Certainly the results which had been achieved by Dr. McCrea were very good.

MR. MONTAGUE HINE referred to a paper which Mr. Foster Moore contributed to the British Medical Association meeting at Nottingham on the significance of retinal hemorrhage and suggested that members should read that and Dr. McCrea's contributions together.

MR. HUMPHREY NEAME said in the paper Mr. Hine mentioned there was a reference to some experimental work on the means by which leakage took place from capillaries.

LIEUT.-COL. R. H. ELLIOT commented on the changed point of view of ophthalmic surgeons now in comparison with that of twenty years ago. At that earlier date the ophthalmologist tried to cure these toxic cases himself, whereas now, having recognized their nature, he sent them to the dentist, the laryngologist and rhinologist or the general physician. He had been very glad to have Dr. McCrea's help in a number of cases.

MR. R. AFFLECK GREEVES said it seemed a pity to make a separate group of the kind of cases which Dr. McCrea had described; it seemed more fitting to constitute them a subgroup of retinitis due to sepsis, the larger group being composed of such condition as the albuminuric and the diabetic. In regard to the myopic and senile degeneration cases, he submitted that the pathologic evidence favored these being degenerative, not due to inflammation.

THE PRESIDENT thought gratitude was due to Dr. McCrea for his paper, as it brought out several fresh points.

Some of these patients, having nothing obviously wrong with the eyes, did not consult the ophthalmologist. When cases were encountered by the latter in which the fundus appearances resembled those just shown on the screen, it might be wise to send them to the physician for a general overhaul.

DR. McCRAE briefly replied on the points raised, promising that the publication of the bacteriologic details of his cases would make the nature of the condition clearer. He was not aware of Mr. Foster Moore's contribution, and he would take an early opportunity of reading it.

H. DICKINSON,
Reporter.

CHICAGO OPHTHALMOLOGICAL SOCIETY.

December 20, 1926.

DR. E. J. GARDINER, President.

Pineal Gland Enlargement.

DR. GEORGE F. SUKER showed a patient whom he had presented a year ago in whom pineal gland enlargement caused visual disturbances. At that time the patient's vision was reduced to 10/200 each eye, with a large cecentral scotoma in the upper half of each field. The color fields were inverted and of normal size, form field not constricted. No evidence of hysteria; general symptoms of malaise, headache and slow mental activity. The treatment consisted of roentgen ray exposures, large doses of iodides and mercury, with pituitarin and thyroid. Fundus findings were negative. Roentgen ray showed a very large and rather dense shadow around the pineal gland.

The status today was as follows: Vision each eye 20/30; no cecentral scotoma, and a normal color and form field; no shadow about pineal gland, which was considerably smaller than a year ago. General condition was normal. At no time could a latent or active lues or tuberculosis be demonstrated. The nature of the pineal gland disturbance remained unsolved.

Sympathetic Inflammation.

DR. W. A. FISHER presented Mr. D. L., aged 25, single, bookkeeper. He was myopic. He was injured Sept. 23, 1926, in an automobile accident, breaking his glasses and cutting the globe of the left eye on a level with the horizontal meridian, 3 mm. from the cornea on the nasal side. The wound apparently healed in a short time, but after five weeks the right eye began to show symptoms of disease, increasing gradually until it reached the state at which it came under observation, Dec. 10, 1926.

Examination of the injured left eye showed edema of the upper lid, intense pericorneal hyperemia, with slight injection in the conjunctival vessels, swelling of the conjunctiva which corresponded to the lesion, and an extensive cut about 15 mm. long. This cut might be divided into two portions—an upper where the iris was held and a lower, smaller and crescent shaped, corresponding to the scarred sclera. Cornea showed white zones in the pupillary area. With oblique illumination these white spots were found not to be leucomas but corneal infiltrations; small exudates were noted on the posterior surface or in the endothelium of Descemet's membrane. Slit lamp: infiltrations of the cornea, deposits in Descemet's membrane being seen more clearly in each eye than with the ophthalmoscope. These exudates in some places followed the paths of the corneal nerves. Anterior chamber: small exudates were noted floating in the aqueous humor coming from the inflamed iris and ciliary body. Iris: appeared blurred. The structure of the iris was hazy as a result of exudates which were in the meshes of the iris. The most important changes were found in the pupillary margin. The pigmentary epithelium coming from the retina had largely disappeared, only the iridal stroma being seen in a stage of atrophy. The pupillary margin was closely united to the anterior surface of the lens, forming a powerful semiannular synechia. In this region there was also present an extraordinary pigmentation on the an-

terior capsule. In the stroma of the iris signs of incipient atrophy were clearly noted. The pigmented cells having partly disappeared left uncovered in some places the tunica externa of the iridian vessels. Lens: the anterior surface of the lens was sprinkled with small accumulations of pigment. The center was normal, permitting the entrance of light; on the posterior surface were small accumulations of exudate proceeding from the inflamed ciliary body. The exudate extended from the equator to the posterior pole of the lens. Vitreous: small floating bodies were seen, which had little mobility as the vitreous was dense. Vision: L. E. 20/200. Tension 38.

Right eye: the eyelids were quite similar to those of the left eye. Conjunctiva: presented both pericorneal and conjunctival hyperemia, the former predominating. Cornea: anterior surface normal; in the posterior were found numerous precipitations in the endothelium in Descemet's membrane. Anterior chamber: filled with cellular and albuminous exudates. Iris: marked symptoms of edema, contracted and sluggish pupil. Lens and vitreous: similar to left eye. Vision: R. E. 20/20; near point markedly blurred; tension normal.

A diagnosis of sympathetic inflammation was made and the case was referred to Dr. A. Vila Coro, director of the laboratory of the Chicago Eye, Ear, Nose and Throat College, who proposed treatment by autosero- and autohemotherapy, with a prognosis of a cure in two weeks. The patient was given 3 cc. of serum in his muscle from his own blood, the serum being separated by the ordinary procedure. Atropin and dionin were also administered to obtain mydriasis and relieve congestion of the iris. One day after first injection the patient experienced a marked improvement and could look at the light without much discomfort. The pericorneal hyperemia had diminished and the iris of the right eye was somewhat dilated. Atropin and dionin were instilled in both eyes. Tension was normal in both eyes. A second treatment was given the following day and the symptoms continued to dimin-

ish. The next day another examination was made with the slit lamp. The infiltration in the cornea in the left eye and the exudates in Descemet's membrane and anterior chamber of both eyes had diminished to a considerable extent. The conjunctival hyperemia and pericorneal hyperemia had practically disappeared. The pupil of the right eye was fully dilated. The exudates were seen more clearly in the anterior part of the crystalline lens. An injection of 15 c. c. of the patient's blood was again administered, the blood being injected into the muscle immediately upon extraction without separation of the serum. On December 20, when the case was presented, vision of the right eye was 20/15, of the left eye 20/25. A third injection of 15 c.c. of his blood was given.

Treatment of sympathetic inflammation had been considered most unsatisfactory by methods recommended in recent text books, therefore, any new treatment that promised good results would be welcomed by all. The quick and gratifying results in this case seemed marvelous, and Dr. Vila Coro had related many similar cases with equally good results.

Tension had been taken with the Gradle tonometer before treatment was started; in the right eye it was 24, in the left, 38. It seemed incredible that the tension in the injured eye would instantly drop from 38 to 24 upon the first injection, and remain 24. Not only that, but all the symptoms had responded in a similar manner from the beginning of the treatment. Within ten days he had one serum and three blood injections. Vision in the injured eye had improved from 20/200 to 20/25; in the uninjured eye, from 20/20 to 20/15, and whereas the near point in this eye had been blurred, it was now normal.

Dr. Vila Coro predicted exactly what occurred in this case under the treatment, including immediate reduction of tension in the injured eye to normal and a cure within two weeks.

Discussion. DR. WILLIAM E. GAMBLE pointed out that it must be remembered that sympathetic ophthalmia was a very chronic disease, not accom-

panied by inflammatory symptoms such as edema of the lids, as was found present in this case of so-called sympathetic eye. He had never known edema of any form in sympathetic ophthalmia, and he thought one should be very conservative in making a diagnosis of sympathetic ophthalmia in this case. Dr. Fisher spoke of Dr. Vila Coro having cured many cases of sympathetic ophthalmia by this treatment. In his own long experience in treating diseases of the eye he had seen very few cases of sympathetic ophthalmia. It had been known for some time that the injection of autogenous serum or blood had a hemostatic effect; but this was about all that was known of its effect, and on account of this want of knowledge, the presentation of Dr. Fisher's case was very valuable.

DR. HARRY GRADLE agreed with Dr. Gamble. One could not be justified in diagnosing a case as sympathetic ophthalmia until other possibilities had been eliminated, such as uveitis of focal origin. A complete physical and hematologic examination should be made. The treatment used by Dr. Vila Coro was introduced into ophthalmology three years ago by Angelucci of Naples, who used autohemotherapy not only in uveitis but in all cases of capillary disease, trachoma, etc. In disturbances of the eye where the capillaries were involved this therapy could be of great benefit. He himself used whole blood, which was injected intramuscularly.

DR. THOMAS FAITH said he had been asked to see this case in consultation and without any hesitation advised enucleation of the injured eye. Sympathetic ophthalmia in his experience had been rare, but he believed that no man present would have diagnosed the case as other than sympathetic ophthalmia. The patient was suffering from uveitis, there was a history of injury, with recession of the near point in the sympathizing eye, with apparently normal vision for distance, but all the earmarks of iridocyclitis were present in the sympathizing eye. Descemet's membrane was studded

with exudates; the pupillary margin of the iris was irregular.

His experience had been that one was lucky to get any vision in such case. He had seen one case with good vision in a sympathizing eye following enucleation of the blind eye and the administration of salicylates and mercury. It was usually impossible to make a scientific diagnosis—the patient's eye could not be taken out and examined histologically before deciding what was to be done.

The remarkable thing in the case under discussion was that within half an hour after injection of the serum the tension went down to 24 whereas it had been 38 previously. The pupil could not be dilated with mydriatics but began to dilate at once following the injection of serum. If the diagnosis was not right, at least autogenic therapy seemed to have been right as the subsequent result was little short of a miracle.

Dr. H. B. YOUNG said that he could recall just two cases of sympathetic inflammation. One, as he recalled, was the result of an abscission of the cornea (by colleague in another town) following a perforating ulcer with a large prolapse of iris, to which operation there had been the minimum of reaction. Unaccountably, the operator, in dismissing this case as convalescent, had overlooked a mass of exudate back of the iris in the other eye—a characteristic sign of sympathy. The offender was promptly enucleated, but the sympathizer was not saved.

Another case was also a matter of prolapsed iris, from a small knife thrust. This case seemed so near dismissal that he had no hesitancy about leaving town for three days, but upon his return he found the other eye in trouble. The offender was immediately enucleated, and the patient was put in a dark room, with atropin locally and mercury internally. After a number of weeks he had 20/40 vision, which he retained.

There was a difference between seeing the case in its first stage, where Descemet's membrane was principally involved, or later, when everything

was gummed by ciliary exudate. It was his earnest hope that he had no more cases to recall.

Dr. GOLDENBURG asked Dr. Vila Coro what therapeutic reaction was expected from the blood other than a protein reaction. Sympathetic ophthalmia at times was very difficult to verify without a cross-section of the eye. Quite a number had been apparently cured with nonprotein reaction, but when they came to examination microscopically he was not so certain. Was there anything specific about the blood injection other than the protein?

Dr. W. A. FISHER (closing) said that it was not surprising to have some of the members question the diagnosis. However, if he had ever seen a typical case of sympathetic inflammation, this was one. He was frank to say that had this man had the treatment he had given for many years, he believed the result would have been much less satisfactory. The treatment was so simple and promised so much that it seemed incredible that anyone would object to it. The patient had all the symptoms of sympathetic inflammation. The fact that he had 20/20 vision in the sympathizing eye did not mean that he had not lost some vision, because now he had 20/15 vision in that eye. He had not only diminution of vision for far point but for near point as well. The therapeutic result was marvelous. He asked the Chairman to repeat Dr. Goldenburg's question to Dr. Vila Coro in Spanish and to translate his answer.

Dr. VILA CORO replied, in answer to Dr. Goldenburg's question, that no reaction whatsoever was obtained. If a heterogeneous protein were used there would be a reaction, but the blood serum being of the same character as the blood there was no reaction other than the effect on the disease; whereas the heterogeneous injection would effect a general reaction. He did not know what caused this effect on the disease, but did know that it brought about this result.

Dr. W. A. FISHER went on to say that Dr. Vila Coro had been Professor of Ophthalmology at the University of Barcelona for the past three years, and

Barraquer's assistant for six years, and had treated a number of cases similar to this, in the same manner. He asked Dr. Gardiner to question Dr. Vila Coro in Spanish and ask if he had cured many of these cases, and how many that were treated had failed to respond to the treatment.

DR. VILA CORO said that he had twelve cases, mostly traumatic, in working men, and of the twelve he had not had one failure.

DR. CLARENCE LOEB suggested that Dr. Gardiner ask Dr. Vila Coro to write up his experience with this treatment, for publication by the Society, Dr. Gardiner to translate the manuscript.

Paring of Dense Corneal Opacities Following Gonorrheal Ophthalmia.

DR. E. J. BLONDER presented a case which had entered Dr. Suker's service at Cook County Hospital, for tattooing. Perception of light only was present. Upon Dr. Suker's suggestion the cornea was pared down to Descemet's membrane with a cataract knife. Slight reaction followed the operation, and the patient was able to leave the hospital in a few days. The cornea had been pared four times, each time down to Descemet's membrane. The eventual vascularization was nil; vision was materially improved from perception of light to counting of fingers at about four feet. The case was presented for the purpose of encouraging such operative procedure for restoring sight rather than resorting to the cosmetic method of tattooing.

Traumatic Cataract with Lens Adherent to Cornea.

DR. E. J. BLONDER presented a case from Dr. Harry Gradle's service. Patient complained of poor vision in the left eye for six years. History was that six years ago while pulling nails from a wooden hoop his eye suddenly became painful and injected and remained so for several days. No physician was consulted. Vision became impaired and gradually decreased until only projection and perception of light remained. About two weeks following

accident a white spot developed on the cornea. At the present time, examination of left eye revealed a dense white scar on cornea, about 5 mm., slightly curved longitudinally in the pupillary region at one o'clock, bisected by a transverse scar 2 mm. in length. Oblique illumination revealed leucoma attached to lens capsule. Iris irregular and adherent to lens capsule; irregular areas of opacities on lens.

Slit lamp examination: thru center of cornea, a 5 mm. vertical curvilinear thru and thru scar, with some hematomogenous pigment in stroma at nasal and temporal borders. Posterior surface of scar in center of cornea bulged posteriorly in conical form for 1 mm. At that point was a pigment ring about 1 mm. wide from which a truncated cone rose to center of anterior surface of lens. The cone appeared to be formed by lens capsule and was filled with opaque lens cortex. A large amount of pigment was scattered over surface of cone. At axis 320° was a broad fair adhesion between pupillary border of iris and anterior capsule at base of cone. The lens was markedly decreased in size. Tension of eye normal; roentgen ray revealed no evidence of foreign body; right eye negative.

Congenital Anomaly or Productive Retinitis.

DR. CLARENCE LOEB presented a case for the purpose of diagnosis. (p. 272.)

Soemmering Ring Luxated into the Anterior Chamber.

DR. C. O. SCHNEIDER read a paper on this subject, illustrated with photographs. (p. 273.)

Intracranial Arteriovenous Aneurism: Pulsating Exophthalmos.

DR. G. F. HARKNESS, Davenport, Iowa, demonstrated a patient with this lesion which followed an automobile accident. The roentgen ray showed a fracture of the posterior clinoid process. Operation is contraindicated, as the condition is well controlled by external pressure with a special instrument in the shape of a modified "pant's guard" such as was used in the days of bicycling. An extensive bibliography

and statistics of preceding cases in the literature were given.

George Bartisch.

DR. ROBERT VON DER HEYDT showed a book by this author entitled "Augendienst," published in 1583, and also showed lantern slides of various illustrations of operations and instruments.

C. LOEB, Secretary.

THE MEMPHIS SOCIETY OF OPHTHALMOLOGY AND OTOLARYNGOLOGY.

December 14, 1926.

DR. E. D. WATKINS, Presiding.

Tumor of the Orbit.

DR. W. LIKELY SIMPSON presented B. C., who was shown for the second time before the Society. The tumor was removed from the left orbit Sept. 15, 1926, by the external route, leaving an open wound in which 100 milligrams of radium were left for 24 hours on Sept. 22, 1926. Since the operation the tumor has shown no symptoms of recurrence, unless a marked swelling of the lower lid which came on a few days ago be a recurrence.

Discussion. DR. SHEA was interested in seeing the slides of the tumor. He said that the patient was rather old for sarcoma.

DR. PHIL LEWIS thought that it might spring from the lacrimal sac.

DR. STANFORD asked if the slough could be due to the radium.

DR. SIMPSON said that there was little sloughing, probably not due to radium.

Chronic Glaucoma.

DR. ELLETT presented P. J., colored, male, aged 70, who complained of gradually failing vision in O. S. for past two years. Six months previously the eye had been examined in Mississippi and a prognosis of ultimate blindness given. He has not had any medical treatment. O. D. vision equalled 15/30 improved with $- .50$ cy. ax. 180° to 15/13. O. S. vision equalled 15/30 improved with $- .50$ S., $- .50$ cy. ax. 180° to 15/30. Addition of $+2.5$ S. enabled him to read Jaeger 1 type with

the O. D. and J. 14 with the O. S. The pupillary reactions were normal. The tension to fingers seemed to be increased. Ophthalmoscopic examination of the the right eye showed a posterior central lenticular opacity, while the fundus was apparently normal.

The left eye showed the media to be clear. The nervehead was totally cupped and atrophic, with undermined edges. The veins were engorged while the arteries showed a moderate sclerosis.

The visual field of the right eye was normal; that of the left was markedly contracted, especially temporally and above, with relative and absolute paracentral scotomata. The tension with the Schiötz tonometer was O. D. 30; O. S. 45. Operation was advised on the left eye.

Keratoconus.

DR. E. C. ELLETT presented A. K., aged 21, male, who has known for four or five years that there was some difficulty with his vision. He had been in Chicago at various dispensaries where frequent changes of lenses had been prescribed. There had been a gradual loss of vision in the left eye in spite of treatment, while the right also was beginning to fail.

Vision with O. D. equalled 15/100 improved with -4 S. $+6$ cy. ax. 150° to 15/25. He could read Jaeger 3 type. O. S. equalled M.O., improved with -1 S. $+5.5$ cy. ax. 15° to 15/70—1.

On inspection, the characteristic condition of the cornea was evident, the bulging of the cornea being accompanied by a fine, striped opaque disturbance of Descemet's membrane at the center. The ophthalmometer showed an irregular corneal astigmatism more marked in O. S. The eye-grounds were normal. Dec. 8, 1926, under novocain and cocain anesthesia, a canthoplasty was done on the left eye, followed by a sclerectomy after the technic of Lagrange. Convalescence has been uneventful.

Discussion. DR. A. C. LEWIS asked how much correction could be gotten by the Lagrange operation.

DR. ELLETT said that his personal experience was very small in such cases. Others preferred the cautery to cause contraction. Fox's operation was preferred by some. Any operation done must be combined with some procedure to lower intraocular tension. Patients with keratoconus accept almost any glass correction. He had not seen better results from operation than from treatment such as eserin and bandage. He thought best to operate in this case. His experience had not been sufficient to draw conclusions as to preference of procedure in such cases.

Glaucoma.

DR. E. C. ELLETT presented Mrs. J. B. F., aged 68, who noticed a blurring of vision some six months ago when glaucoma was discovered and suitable treatment with eserin instituted. The drug failed however to maintain a lowered tension and operation was advised.

Findings previous to operation were: Vision with O. D. was 20/100. With +1.5 S.+1.75 cy. ax. 180° vision equalled 20/40. Vision with O. S. was 20/100. With +1.5 S.+2.5 cy. ax. 180° vision equalled 20/30. The pupils were pinpoint, due to eserin. Under cocain dilatation the right eye showed a halo about the disc which was pale and cupped, especially below. The left eye showed the same fundus condition with linear opacities in the lens. Tension in each eye with the Schiötz tonometer was 47. Fields were shown.

Nov. 29, 1926, a corneoscleral trephine with buttonhole iridectomy was done on the right eye. Dec. 3, 1926, the same operation was done on the left eye. Examination on December 8, disclosed choroidal detachments in both eyes, the one in O. D. being both in and out, the one in O. S. being in, only. On December 11, O. D. was normal, while O. S. showed a detached choroid out, which is still present. The trephine openings have remained patent and are filtering nicely, the left bleb being of approximately the same size as the right immediately following the operation, and remaining so until December 13, at which time

there was a bleb of the conjunctiva about four times the size of the original.

Vision at the time with glasses was 15/25 and 15/40 while the tension to fingers was satisfactory in each eye.

Discussion. DR. STANFORD had seen the case last July at which time the fields were about the same as in the report. He treated him medically. The patient went to Milwaukee for treatment for two months.

DR. P. M. LEWIS spoke of a case reported last summer; a young negro boy who had congenital glaucoma each eye. One eye was removed and the other eye trephined followed by detachment of choroid.

DR. A. C. LEWIS asked if detachment of choroid was more frequent after Lagrange than after other procedures.

DR. ELLETT said that he had seen few cases of detachment of choroid after glaucoma operations and could not draw a parallel.

Dilatation of Pupil.

DR. J. J. SHEA reported the case of Mr. B., aged 52, referred by Dr. Stiles of Birmingham, for a sphenoethmoidal operation. Among the clinical findings was a dilatation of the right pupil which had lasted over a period of twelve years. No other pathologic eye condition was present. The pupil reacted slightly to both light and accommodation. The day following the ethmoidal operation the pupils were equal and have remained so to the present.

Discussion. DR. P. M. LEWIS thought the condition due to irritation of sympathetic thru sphenopalatine ganglion.

Fracture of the Orbital Apex with Optic Neuritis and Atrophy.

DR. A. C. LEWIS reported on F. L. R., seen on Nov. 6, 1926. The patient had just been in an automobile collision, in which he was knocked unconscious and sustained numerous deep cuts and severe contusions about the head and face. When first examined by him at the Methodist Hospital that night there was so much swelling of the periorbital tissues and left eye

lids that it was impossible to make a thorough examination of either the globe or the fundus oculi. There was some laceration of the conjunctiva present. A three inch scalp wound near the crown of his head about one inch to the left side had been sutured by Dr. Harwell, also a short cut above the left eyebrow and a long cut just below the left orbital ridge which passed thru the eyelid and thru the bulbar conjunctiva.

Roentgen ray plates of the orbital region and cranium showed a fracture in the posterior part of the left orbital cavity in the neighborhood of the orbital foramen. This had evidently caused a traumatic injury of the optic nervehead which showed an edematous condition thruout the week of his hospital confinement. There was never any vitreous hemorrhage present, but several minute retinal ones. Retinal vessels were normal in appearance. He was unable to rotate the left eye upward and there was very limited lateral motion when he left the hospital. This had improved when seen on Nov. 30, 1926, but considerable weakness still existed. The disc at that time showed marked pallor and the eye remains totally blind.

Discussion. DR. STANFORD spoke of making pictures to show fractures in the region of the optic nerve.

DR. J. B. BLUE spoke of a severe optic nerve lesion due to ice pick injury.

DR. M. G. SELIGSTEIN,
Secretary.

MINNESOTA ACADEMY OF OPHTHALMOLOGY AND OTOLARYNGOLOGY.

Section of Ophthalmology.

October 15, 1926.

DR. D. L. TILDERQUIST, Presiding.

Coloboma of Iris and Choroid.

DR. A. G. ATHENS reported the case of a patient who was sent by his teacher to see if anything could be done for his eyes. The mother had noted that the child's eyes were small and peculiar looking in babyhood. When he began to walk he had difficulty in getting

around chairs and stumbled over objects on the floor. The eyes were examined at four or five years of age and glasses prescribed, but these were not worn much. When he started to school at the age of six he could not see the hook on which to hang his cap. He was taken out of school during the first year and sent to a school for the blind, where he remained for three years and learned to read by the touch method. While there he did not use glasses but the vision seemed to improve. On returning home he did well in school in the "sight saving" class and soon nearly caught up with his fellows of the same age. He is now in the eighth grade. He has no difficulty in getting around and sells papers on the streets after school.

Past illnesses include scarlet fever, measles, whooping cough, mumps in early childhood, and smallpox at the age of eight or nine. He is healthy and strong, but not robust.

The father has normal eyes. One paternal first cousin is "cross-eyed." One paternal first cousin had one brown and one blue eye. The mother, 38 years old, had a "stroke" at 31, which left the right side of the face paralyzed. The mother has worn glasses for slight hyperopic error for seven years. All the mother's family, except her father, had "weak eyes" and wore glasses, but there was no obvious disease nor were there congenital defects. The patient has two sisters with normal eyes, and one brother who had glasses for slight refractive error but refused to wear them.

The corneae and globes are small. There is a large coloboma of the iris of each eye on the lower inner margin, which gives eccentric position and an "egg shape" to the pupils. Both fundi have large white colobomata of the choroid involving most of the lower half of the fundi and surrounding the discs. Considerable pigment is piled up at the border of these defects and several vessels pass over them.

Glaucoma Following Cataract Operation.

DR. J. M. ROBINSON reported a case of inflammatory glaucoma in a patient

who gave a history of, and had been treated for, diabetes, but who had had no sugar in the urine for a year. Both eyes had shown a few very small retinal hemorrhages. Following an Elliot operation nine months ago, there had occurred a retinal detachment in the extreme nasal portion. This disappeared in five days. The fellow eye was trephined seven months later. The vision of the eye which had a detachment is now 20/30. The eye later operated on is 20/40. There is a varying refraction with a tendency to myopia. There has occurred during the past six weeks a low grade iritis with general rheumatic symptoms. The tension of both eyes has been normal since the operation.

Cataract Complicating Glaucoma.

DR. HOMER COLLINS reported a case of glaucoma in each eye. Iridotaxis in the right eye was followed by enucleation. Cataract extraction following iridotaxis in the left eye resulted in a filtrating scar and capsular cataract.

The patient had "neuralgic," i. e., glaucomatous, attack in the right eye fourteen years ago with impairment of vision. He was seen first one year later when the vision equaled ability to count fingers at seven feet. He had been under treatment with atropin by his family physician. Under eserin the patient improved until about six years later, when the vision began to fail. He passed from under my observation for three years, during the latter part of which time he became practically blind in his right eye, with occasional attacks of intense pain. (Eserin had been used until he passed from under my observation.)

About three and a half years ago he had two or three attacks of violet vision in the left eye followed by large central scotoma. The last of these attacks was followed by a glaucomatous attack with increased tension, impairment of vision, but no reduction of the peripheral field. The vision went down to 10/200; then up to 20/30. Two months later the tension varied from 42 mm. of Hg. to 55 mm. with very

little limitation of the field. The central scotoma disappeared.

In October, 1923, he consulted Dr. Schneider of Milwaukee, who advised against operation. Four months later the nasal half of the field was gone with some limitation below. He then took six treatments with the galvanic current (on his own initiative) which resulted in his becoming steadily worse—most of the lower and part of the temporal field disappearing. He was then seen by Dr. Burch who performed an iridotaxis, lowering the tension from 53 mm. to about 20 mm. At the time of the operation there were opacities in the vitreous and beginning opacities in the lens. As the blind right eye continued painful, Dr. Burch performed an iridotaxis on this, which lowered the tension satisfactorily, but there ensued a sluggish rebellious ulcer of the cornea of a somewhat herpetiform nature and appearance. This caused so much pain that I enucleated the right eye about two months after the iridotaxis.

The vision continually failed in the left eye, due to increasing density of the cataract. Following cataract extraction, the vision increased from perception of light or movement of hands at two feet, to 8/200. Healing of the operative wound left a filtrating scar and slight hernia of the iris. The tension remains about 20 mm.

Would discission of the secondary cataract be justifiable as the vision now equals but 2/200? The tension equals 20 mm. or less.

Discussion. DR. J. F. FULTON said that he agreed with everything that had been done for this unusually severe and complicated case of glaucoma, and advised the needling of the remaining capsule thus overcoming the defective vision that this was producing.

Tumors of the Orbit; Diagnosis and Treatment.

DR. W. L. BENEDICT read a paper on this subject.

W. E. CAMP,
Recorder.

American Journal of Ophthalmology

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ULTRAVIOLET LIGHT THERAPY.

At the scientific sessions of the medical societies, we interrupt the account of how we played the "dog leg hole" the day before, to listen to a new method of diagnosis, we reach for our hats when we note that the next number is an academic discussion, but we all come back and fill the room to hear about a new treatment. After all, nine-tenths of us spend most of our time in treating, so naturally that subject interests us most, and we are quite willing to leave the preliminary studies to those who enjoy them.

One of the newer therapeutic agents, which has been seized by the profession, is the uviole, or ultraviolet "light." Long known to have certain properties and many possibilities, this means of treatment has been brought into a usable form, by the introduction of instruments capable of delivering ultraviolet light in fairly measurable quantities. The carbon arc is at present the chosen means of illumination. Therefore, the intensity is exceedingly variable, depending on the adjustments of the carbon. At times the violet spot is brilliant and at times dull, so expressions of dosage can be

only relative, until some more constant light is found.

Actually, we know very little about the properties of these rays, that lie beyond our visible solar spectrum. That they have a general effect on cell metabolism is certain. Children of Birmingham, England, who were for one year, in their school hours, behind glass which would permit the transference of the ultraviolet radiations in the sunlight, gained on an average of three pounds more weight, and one-half inch more height, than their fellows who were behind ordinary glass. This fact was taken so seriously that this special glass has become a requirement for Birmingham schools.

Then too, it is said that the available calcium content of food can be changed, by exposure to the ultraviolet light. German writers especially, claim splendid results in the treatment of tuberculous iritis and episcleritis by this light. This brings up the very interesting difference in the percentage of tuberculosis given as a cause of iritis by Germans and by Americans. The former believe that about forty-five per cent are tuberculous, while the latter think that fifteen is nearer correct.

Some of this difference is accounted for by the tendency of the European to label any low grade inflammatory process, in which the etiologic factor cannot be surely ascertained, as tubercular; while the American calls it due to focal infection. However, this difference is quite comparable to that of the incidence of bone tuberculosis in Germany and in America; and in bone lesions the diagnoses are checked by frequent pathologic specimens from biopsies and autopsies.

But however large or small the amount of tubercular disease, if uviol light is almost specific for it there can be no doubt of the recognition of this treatment. Interesting points of differential diagnosis of the various forms of iritis are claimed by King, who believes that it is possible to separate the chronic inflammatory type, such as tuberculosis, sympathetic disease and lues, from the others by the slit lamp, if the lesion is seen in its early stages. Two features especially he regards as typical of tuberculosis; a diffuse glassy swelling of the iris particularly in the region of the sphincter and the collar-ette, and the formation of nodules,

Favorable reports of uviol light treatment are coming from writers in this country too, and we shall soon have sufficient data to draw definite conclusions of the value of this new agent. Tho statistics are as yet meager, they certainly indicate a place for this instrument in future ocular therapy.

L. T. P.

GRADUATE COURSES ABROAD.

The American physician should begin his special study of Ophthalmology in America. The common variations in the eye, its common defects and diseases, are just as frequent and just as accessible in American clinics as in those of Europe; and opportunities to pursue the fundamental studies of optics, histology and pathology, are to be found in all our large medical centers. But when one has made himself familiar with the common diseases and methods of examination and treat-

ment, that should first be mastered; and particularly when one begins to feel that he is able to practice ophthalmology alone—may not know all but knows all that is necessary; he should visit foreign clinics and study under conditions with which he is not familiar. This will give him new views of his work, and make him see there is much that he does not know; and that study must go on and extend thru many years, if he is ever to become a master in his special work.

The opportunities for graduate study, and graduate courses, have developed as rapidly in Europe, in the last few years, as they have in America. Never before has it been possible to obtain there such a wide range of instruction, with such economy of time; and the clinical opportunities to study unfamiliar conditions are now broader and better than ever before. Under News Items the section on Graduate Courses gives some idea of how much is being offered this season to alert ophthalmologists; and of the planning and grouping of attractive courses and enlisting of accomplished teachers, that have been found worth while, to meet the needs and convenience of American students.

In Great Britain the courses given in connection with the ophthalmic hospitals and great ophthalmic clinics have always been practical, and some of them are readily accessible to English speaking physicians. The student assistantships, to which they lead, still offer large opportunities for real clinical work. In the London Ophthalmic Hospitals courses can be taken of one to six months each. Or perpetual tickets issued for the practice of the hospital, include one of the five months' courses, which begin in either March or October.

In Paris there has been a general organization and coordination of work in ophthalmic institutions, that make it easier for the visiting student to get what he wants. This year, beginning April 28, there will be a special course of 40 lectures, given at the Hotel Dieu, by Prof. F. Terrien and his associates and assistants, covering symptomatology

ogy and recent methods of examination, treatment of infections, and on the surgery of the ocular adnexa. In Nancy, June 13 to 18, inclusive, there will be given a special course on ocular biomicroscopy, by six instructors including Koby of Bale. The class is restricted to 24. In general the lectures will be in French, but so far as possible explanations will also be given in other languages.

For some years courses that have been called "finishing" or "advanced" courses in various departments of medicine, have been given in Berlin and Vienna. The published lectures given in one of these courses at Berlin have recently been noticed in this Journal (p. 70). The latest announcement shows that at Vienna, such courses relating to ophthalmology are given by 8 professors, docents and assistants; and that the classes are limited to from 2 to 10 students. Such courses are generally given in German.

Of greater interest to our readers are the courses given in English. The intensive course arranged by Dr. George W. Mackenzie of Philadelphia, starts on its trip June 24th and continues five weeks, giving ten hours a day for thirty working days. In Vienna Prof. Lauber and Drs. Guist and Pillat will take part. The fourth postgraduate course in ophthalmology at Vienna will this year extend from October 1 to December 6, inclusive. In this will participate Profs. E. Fuchs, Meller, Lauber and Lindner; Docents A. Fuchs, Bachstez and Guist, and Assistants Drs. Pillat, Safar, Urbanek and Nitsch; while subjects related to ophthalmology will be taught by 6 professors, Docents and Assistants, from other departments.

This course will be given to a minimum class of 10 and limited to a maximum of 16 students. All teaching will be given in English. Applications for the course will be accepted in order of priority. It will be remembered that for the similar course given last year, the full number of applications had been filed before June; so that a number who wished to take it last year, were excluded. In this course will be

given only advanced work on refraction; but collateral opportunities for beginners will be given at the Vienna clinics. For oculists who wish to spend a few weeks abroad this year the facilities offered for coming in contact with the work of the Vienna masters of ophthalmology are very inviting.

E. J.

THE OPHTHALMIC YEAR BOOK.

At the meeting of the American Medical Association, last year at Dallas, Dr. William H. Crisp, editor of the Year Book, read before the Section on Ophthalmology a paper about it, which was printed in the Presession Volume, and with the discussion of it, in the Transactions of the Section, page 55. After the discussion a committee was appointed to consider the possibilities for continuing the Year Book and securing for it better permanent support. That committee is expected to report to the Section, at the meeting to be held in Washington, May 17. The action of the largest, most widely representative body of ophthalmologists in connection with that report, will have a large influence in determining if, and how, the Year Book will be continued.

The only other body, whose judgment could be considered as of equal or greater weight in this matter, is the body of subscribers to this Journal; who have taken also the Ophthalmic Year Book for the last ten years. This is the time when those who think it of value, should write to the editor to that effect. Those who take an opposite view are equally entitled to be heard. Those who are indifferent to the whole matter can easily express their indifference, by ignoring it. Those who have been active in preparing and publishing the Year Book will have to guide their future course by what they can learn thru the reaction of their ophthalmic colleagues to the issue presented.

The paper of Dr. Crisp brings out distinctly the significant points in the history and the purposes of the Year Book, and also indicates why its value

and claim to permanent support should be considered at this time. He expresses his belief that it is valuable and should be continued, and also "that its usefulness varies widely to different ophthalmologists, depending on the part played in their lives by routine practice, research, and the preparation of ophthalmic papers, respectively."

He suggests the character and extent of difficulties that "threaten its existence." He thinks it may be continued for a few years by the efforts and sacrifices of a small group of supporters. "But if it is to be secure of permanence, either it should be capable of paying its own way, on the basis of a list of subscribers who feel the need sufficiently to be willing to bear the cost, or must be maintained from some sort of endowment, either private or by collective action of scientific organizations."

Among the many ophthalmologists, engaged chiefly in routine practice, are some who still try to keep their minds active by study to extend their knowledge and to keep in touch with the advances of ophthalmology, without engaging in research, or in writing many ophthalmic papers. There are also many who cannot conveniently profit by the opportunities of a medical library that is supplied with ophthalmic journals, or cannot readily get what the journals in foreign languages contain, until it is abstracted in English. Such workers are valuable to our profession, and to the communities they serve. Their needs should be met. Only they can tell, whether they find the Ophthalmic Year Book an important help; and by what modifications it could be made more helpful. It is hoped that they will contribute to a wise course, as to the continuance of the Year Book, by expressing clearly what they need and feel with regard to it.

In this connection it will be helpful to get the frank expression of judg-

ment as to the usefulness of lists of books and papers relating to ophthalmology, such as is published in this Journal each month, under the heading "Current Literature." It will help those who have charge of these publications. The writer is frequently reminded that these helps to the study of ophthalmic literature are not used as much as one might expect they should be. The important questions about them are: How could they be made more useful? What might replace them, that would be more widely and fully serviceable?

The work that has been put into the Year Book, and into the lists of "Current Literature" and the Abstract Department of the A. J. O., has been done in the hope that it would be serviceable to ophthalmologists generally. If it does not give results in this direction commensurate with the labor and expense involved; or, if in some other channel the same amount of labor and money would give better results, every one engaged in producing the Year Book, or in keeping up the departments mentioned in the Journal, will rejoice in having the better way pointed out. The greater number of points of view from which the questions can be looked at, the better the chance for finding the best answers to them. Let no reader withhold the light he can throw upon them. Some things can only be done by the cooperation of many. This can be best done by such cooperation. Discussion in local societies, or brief letters to the editor, may be of great assistance.

Any help to continue and improve our publications, that might come from outside the profession, will depend very largely on the attitude and readiness to help, that is found among ophthalmologists themselves. Are they conscious that what they are now getting is of important value? Are they ready to go ahead and see that things are made better, by turning effort and expenditure into the most promising channels?

E. J.

BOOK NOTICES.

Directory of the American Board for Ophthalmic Examinations. 1927. Cloth. 8vo. 126 pages. Chicago.

This small volume, printed by the Board, is interesting from several points of view. Chiefly is it valuable as a directory of those who, after taking the medical degree, have studied and taken up the practice of ophthalmology; and applying for its examination have received the certificate of the Board. In a way it is a summary of ten years of active pioneer work in setting up educational standards, that may and should be attained by those who claim special preparation to deal with the defects, diseases and injuries of the eye and to recognize and interpret the ocular symptoms of other diseases.

Beginning with a list of the officers and members of the Board there follows a short chapter on the origin, aims and methods of the American Board for Ophthalmic Examinations. It confers no degrees, but does give a certificate of having successfully passed the examinations in ophthalmology. Since December 13, 1916, these examinations have been held 21 times in places as far removed as Boston, San Francisco, New Orleans and Montreal; and 545 applicants have received the certificate of the Board. The examinations include the applicant's professional record, a series of case reports, written and practical, clinical and laboratory examinations.

The lists of certificated ophthalmologists are first given by states, grouping together those living in each place, with addresses and years of certification. This is an extremely valuable list, for any physician who wishes to refer a patient to an oculist, in the region where the patient then happens to be. Altho it was not the primary purpose of the Board to form a reliable list of properly trained oculists, this is really one of the valuable things that has been accomplished.

Then follows an alphabetic list of the ophthalmologists certificated by the Board, each with address; and with information as to institutions in which

his general and professional education has been received, degrees obtained, hospital and other positions held and to what branches his practice is limited. After both the geographic and alphabetic lists, blank pages are inserted for writing in additional names.

The book is one well worth the dollar for which it can be obtained from the Secretary of the Board, for anyone in active practice, who may be called upon for information about a particular oculist, or those available in a certain place.

E. J.

American College of Surgeons, Fourteenth Year Book, cloth, 8vo, 838 pages. Illustrated. Printed by the College, 40 E. Erie St., Chicago.

This neat, well printed volume tells something of the purposes and of the doings of the College, and gives the Presidential Address of Dr. W. W. Chipman of Montreal, delivered at the 1926 meeting and devoted to a sketch of the life and achievements of Lord Lister. There is an account of the John B. Murphy Memorial Building, now the headquarters of the College, where libraries are being accumulated and opportunities for research are being offered.

The volume is largely occupied by lists. The list of approved hospitals takes 28 pages, including those in the United States having 35 or more beds. We note in this list the names of nearly all the teaching hospitals and the chief special hospitals for the treatment of the eye, in America. The geographic list of Fellows of the College, giving the address of each and the special branches practiced, takes 194 pages. The alphabetic list, of the 8,000 Fellows, takes 471 pages. It gives the degrees and hospital appointments of each. The list of Fellows deceased since the organization of the college, 14 years, takes 15 pages. Then there are lists of officers and former officers of the college. It is notable that the college has outgrown the United States, where it started, and now includes Fellows in every quarter of the globe, more than one-tenth liv-

ing outside of the United States and its Dependencies.

Most interesting is the evidence these lists give, of the number of ophthalmologists who have joined this surgical organization. In the total membership there are 997 who practice as ophthalmologists, 272 who give attention exclusively to ophthalmology and 725 who also work in otolaryngology. The distribution of those who practice ophthalmology alone is interesting. In American cities of over 300,000 there are 204 Fellows who confine their practice to ophthalmology alone, and 157 who also treat the ear, nose and throat. But in cities of less than 300,000 only about ten per cent confine their practice to ophthalmology. In but two places of less than 10,000 inhabitants does a Fellow confine his practice to ophthalmology, except in a few suburbs of large cities. There are three cities having populations of about 200,000, and five cities of over 100,000 in each of which there is only one Fellow who restricts his work to ophthalmic practice. In cities of much less than 300,000 evidently the treatment of eye, ear, nose and throat is the extent to which specialization has been carried, by most Fellows of the college. Yet there are several cities of 15,000 to 30,000 where men are known to have good practices confined to eye work alone, whose standing is recognized by Fellowship.

Such carefully compiled lists of our profession, kept quite up to date, afford an excellent basis for medico-sociologic studies, as well as a valuable directory of colleagues to whom inquiring patients may be referred.

E. J.

Transactions Section on Ophthalmology, American Medical Association, Dallas meeting, April 19-23, 1926. Cloth, 8vo., 416 pages, Chicago A. M. A. Press, 1926.

The series of the transactions of this largest national organization devoted to ophthalmology has now reached 36 volumes; and the high standard of the papers contained in them is fully maintained by those published in this latest addition to the series.

The requirement of submitting all papers to be presented several weeks before the meeting, and printing them in a pre-session volume, has now been in operation for twenty years. Each paper is thus passed on by the Executive Committee of the Section, and the printed copy is studied by those who discuss it. This tends to exclude papers that are of little value, and induce writers to prepare carefully a paper that has to run such a gauntlet.

This volume contains 21 such papers, two descriptions of new instruments, the minutes of the meeting, reports of two committees; and lists of officers and members of the Section, with a table of contents and an alphabetic index. The titles of these papers have already been listed in Current Literature. The Chairman's Address occupying only two pages deals with a subject not likely to demand the attention of the busy practicing ophthalmologist. It is on the "Importance to the Practicing Ophthalmologist of Contributions to Literature." It is a brief, clear, forcible presentation of truths, that should be better understood and acted upon.

We need to bear in mind, what Lord Bacon said: "Reading maketh a full man, conference a ready man, and writing an exact man." Writing makes us more exact in statement, in observation in our thinking; and, as Knapp says: "The genius of ophthalmology lies in fine distinctions. Our problems, owing to the delicacy of the eye, are characterized by their exactness, so that there must be a willingness to make fine distinctions, which in turn require exact thinking, and thus induce sound action."

The final injunction Knapp lays upon us is equally appropriate and valuable: "So we should not hesitate or postpone, but make a beginning in writing: an observation should be written up, while it is fresh in one's mind and full of interest. Remember Faraday's secret, which he summed up in the words, "Work, finish, publish."

The plan of the Section to print papers in full, and restrict the time for presenting them to the meeting, has

resulted in the printing of some papers of a length that would not be tolerated if the whole were to be read in the meeting. This volume shows less of this defect than some of its predecessors. But there are some papers that may remind the reader of this danger; especially a few dealing with debatable questions of pathology, including two that seem to demonstrate that so-called "glioma" of the retina was improperly named.

E. J.

Société Française d'Ophtalmologie, Bulletin et Memoires. 1926. Paper. Royal octavo. 432 pages, 4 color plates. 64 illustrations in the text. Published by a Committee of the Society, Paris, Masson et Cie.

May 10-12, 1926, this Society held its meeting, completing 39 years of active life. There were 54 papers read and discussed which are printed in this attractive volume. Its lists show that with the 101 new members, each presented at this meeting, by one or two old members, its membership now includes 728. During the preceding year it had lost 8 members, including Landolt of Paris, Critchett of London, and Ziegler of Philadelphia. A brief sketch of each of the eight is included.

This scientific society has always been most hospitable in its complete welcome of members from other countries. Its members residing in France number 328 and in French colonies, 14; while there are 10 in Japan and 10 in the United States and 13 in Canada. Of foreign countries Belgium, 58, and Spain, 68, naturally furnish the largest number; but Poland, 44; Italy, 22; England, 18; Roumania, 14, and Portugal, 12, are well represented. From the minutes we learn that the next meeting will be held in Paris, May 9, 1927, and that the special report will be made by Mawas, on Biomicroscopy of the Anterior Chamber and Iris, normal and pathologic. These annual reports are the leading feature of the annual meeting of the Société Française. The one last year was on the Microscopic Examination of Lesions

of the Cornea, by means of the slit lamp by Prof. Gallemaerts of Brussels, who was assisted by Jeandelize and Bretagne of Nancy and Hambresin of Brussels. Their papers, and the discussions on them by Mawas, Terrien, Trantas, Pesme, Symanski, Morax, Koby and Gallemaerts, occupied the first scientific session.

The papers here published take up a very wide range of topics, from the interpretation of Purkinje-Sanson images, formed by reflection from the surfaces of the cornea and crystalline lens, to the study of the conjunctival circulation by using China ink; from accidents provoked by injections of physiologic serum to industrial blindness; and from Phacoerisis to Retinal Edema of Slow Development in Myopic Eyes. The fact that 54 papers, with the discussions on them, are printed in 355 pages, about 6 pages for each topic, indicates that useless detail and tiresome repetition are eliminated. Carefully chosen language for clear, direct statement characterizes these communications.

For literary excellence this volume seems to average better than any other annual transactions we encounter. For good language, up-to-date information regarding ophthalmic science and suggestive hints that stimulate thought about practical problems, these transactions compare favorably with any of the recent literature that claims the attention of the ophthalmologist. The illustrations are all good and pertinent. The color plates give excellent impressions of clinical appearance of corneal lesions as seen in biomicroscopy, and rare fundus changes revealed by the ophthalmoscope.

E. J.

Société Roumaine d'Ophtalmologie Bulletin du Premier Congres, 1924. Paper, small quarto, 240 pages, 30 ill. Cluj; Cartea Roman-easca, 1926.

This, like the volume noticed above, is published in excellent French; but being the record of the first meeting its 49 members have attempted, there

are strong contrasts. Of its members 13 are already members of the *Société Française*, which has been regarded as something of a model. The meeting began with four reports on Trachoma by Prof. Manolesco, and Drs. Michail, Puscariu and Panaitesco. There are three other papers on trachoma and conditions closely related to it, so that more than half the volume is given to a well arranged, up-to-date, review of this subject, one of great practical importance to the people of Roumania and the countries into which they migrate.

The other papers evince an interest in the things that are of ophthalmic interest in most other parts of the civilized world. The Abderhalden reaction in corneal disease, tuberculin therapy, dacryocystorhinostomy, iridocyclitis cured after extraction of diseased teeth, prevention of late infection after Elliot trephining, the retinal arterial pressure, pathogeny of nephritic neuroretinitis, angular dimensions of the blind spot, ocular hygiene in schools and a new slit lamp are some of the subjects discussed. Several of these papers have extended bibliographies.

It must be admitted that this first Roumanian national congress of ophthalmology has made an extremely good showing of scientific value in its transactions. Considering that Roumania is largely composed of territory formerly in Austria, Hungary, Russia and Turkey, which was first united in one nation in 1921; its ophthalmologists have rallied well to the support of their organization. In this volume are papers written by members in Cluj (Transylvania), Jassy (North Roumania), Timisorara (Hungary), and in other cities far removed from Bucharest. It seems that seven out of nineteen papers came from sections that were included in Roumania in the reorganization following the world war.

The publication of these proceedings in French is a recognition of the fact, that the literature of science is now read in a few languages of Western

Europe that use the Roman alphabet. What is published in Eastern alphabets and languages does not readily reach the main current of scientific thought. This necessity will be the corner stone of a reorganization of some of the older languages that now offer a bar to communication with the modern Western world.

E. J.

Handbuch der biologischen Arbeitsmethoden. Prof. Dr. Emil Abderhalden of the Universität Halle. Abt. V, Teil 6, Heft 6, Lieferung 210. Paper, octavo pp. 839-968. 54 ill. Berlin: Urban und Schwarzenberg, 1926.

This section contains three monographs. The first, 63 pages, by R. Kraemer of Vienna, is upon the Theory of Skiascopy with Cylinders. The second, 46 pages, is on Diagnostic Study of the Color Sense with the Polarisation Anomaloscope, by G. F. Göthlin of Upsala. The third, of 20 pages, by R. Stigler of Vienna, reports on the Study of Visual Sensations by Intermittent Stimulus and Metacostrast. These are all biologic methods of investigation falling properly within the scope of Abderhalden's encyclopedia which he calls a handbuch. They are treated here along lines often followed in monographs, that properly command the attention of the specialist who attempts to know all that has been written about one particular subject. They are not so likely to interest the student who seeks to get a practical knowledge of ophthalmic diagnosis.

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particularly what has been published by French and Spanish writers. Its most important contribution to the literature is in the diagrams in black and red showing the relations of ray pencils that make the fundus reflex visible, to those which do not.

The measurement of the color sense is approached by Göthlin from the method of Nagel's "anomaloscope," an instrument that has been little used in English speaking countries. Much may be said for the light which such investigation throws on the nature and classification of color blindness. But investigations by such rather complex and expensive instruments have not helped much in excluding the mass of color blind men from responsible positions in which their defective color sense would be dangerous to themselves and others.

The "flicker method" for studying the sensitivity of the retina and the apparatus for employing it and observing simultaneous and successive contrasts have been developed and used chiefly in laboratory investigations. In the laboratory they have been productive of valuable and interesting results. This exposition of improvements and refinements in such methods and apparatus will be valuable to those who have become interested in this line of study. It is a question if they have been reduced to a form in which they can have wider clinical application. Certain things can only be reported by the skilled observer. When norms have been thus established some way may be found of comparing with them the sensations of the individual patient.

Abderhalden's biologic working methods are all of value to advanced students and investigators. To have them gathered together and made familiar to workers in the various branches of science will broaden the view of the specialist whose intense interest and preoccupation in one line of thought might render him unconscious of help that he might have from advances that have been made along other lines.

E. J.

The Eye, Ear, Nose and Throat.

Charles P. Small, Albert H. Andrews, George E. Shambaugh. Practical Medicine Series, 1926. Cloth, illustrated, Yearbook Publishers, Chicago.

This welcome little annual volume does not attempt to give more than a modicum of abstracts of articles, appearing in the journals for the preceding year; but does select the striking ones, showing progress in the several specialties. Of these that by Benedict on Medical Ophthalmology, The Slit Lamp in Every Day Practice, by Luther C. Peter; The Eye and the Internist, Browman, on The Visual Field are noteworthy as showing the relation of the eye to the general system and the importance of ocular examination by experts for general diagnosis. Several articles on refraction and accommodation are germane to our routine work. Attention is especially directed to the article of M. F. Weymann on the Reasons for the Early Treatment of Squint, by which binocular vision may be developed and operations may, in many cases, be avoided. Ziegler's article on the Surgery of Trachoma is illuminating and well illustrated.

Considerable space is given to the Intracapsular Extraction of Cataract by the Barraquer method, as used by the Greens. Some of us have tried it over and over again, but have returned to methods better adapted to the individual operators' personality. Now we come to the great subject under present discussion—The Lens Antigen Treatment of Cataract—with an exhaustive abstract of the paper of A. Edward Davis, who has used it for twenty-three years, the last five on humans in 250 cases; with claims of improvement in 50.70% of the cases. The injection of ox eye lenses, filtered emulsion, prepared by the operator or under his control, is made in the leg, arm or abdomen, as desired, daily, for fifty doses over a period of two months. We are waiting yet for further authentic reports by others, and after that will be waiting for patients who will submit to the yet doubtful

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Charles P. Small, Albert H. Andrews, George E. Shambaugh. Practical Medicine Series, 1926. Cloth, illustrated, Yearbook Publishers, Chicago.

This welcome little annual volume does not attempt to give more than a modicum of abstracts of articles, appearing in the journals for the preceding year; but does select the striking ones, showing progress in the several specialties. Of these that by Benedict on Medical Ophthalmology, The Slit Lamp in Every Day Practice, by Luther C. Peter; The Eye and the Internist, Browman, on The Visual Field are noteworthy as showing the relation of the eye to the general system and the importance of ocular examination by experts for general diagnosis. Several articles on refraction and accommodation are germane to our routine work. Attention is especially directed to the article of M. F. Weymann on the Reasons for the Early Treatment of Squint, by which binocular vision may be developed and operations may, in many cases, be avoided. Ziegler's article on the Surgery of Trachoma is illuminating and well illustrated.

Considerable space is given to the Intracapsular Extraction of Cataract by the Barraquer method, as used by the Greens. Some of us have tried it over and over again, but have returned to methods better adapted to the individual operators' personality. Now we come to the great subject under present discussion—The Lens Antigen Treatment of Cataract—with an exhaustive abstract of the paper of A. Edward Davis, who has used it for twenty-three years, the last five on humans in 250 cases; with claims of improvement in 50.70% of the cases. The injection of ox eye lenses, filtered emulsion, prepared by the operator or under his control, is made in the leg, arm or abdomen, as desired, daily, for fifty doses over a period of two months. We are waiting yet for further authentic reports by others, and after that will be waiting for patients who will submit to the yet doubtful

efficiency of the treatment. Another article on Blindness, by Edward Jackson, is specially to be noticed and should be studied in the original by all oculists. The therapeutic action of violet light upon the eye is given as the result of observation of some 70 cases by W. S. Duke Elder and is recommended.

Half of the book is devoted to the Ear, Nose and Throat. The newer tests for hearing by E. P. Fowler, Zinc Ionization by McCoy, What Is Wrong with the Tonsil Operation by F. T. Hill, Bronchoscopy and Esophagoscopy and other articles, are given extensive abstracts.

H. V. W.

Diseases of the Skin. Richard L. Sutton, M.D., LL.D., F.R.S. (EDIN.) Professor of Diseases of the Skin, University of Kansas School of Medicine.

This is one of the most magnificent, modern and exhaustive, special books that has appeared. Dealing, as the oculist does, with not only the eyeball but with the contiguous structures, and not forgetting that he is a general doctor as well as a specialist, it is necessary as well as wise that he keep up with the progress in general conditions, as well as in the specialties that have some relation to his own work. Diseases of the skin often affect the eyelids, the conjunctiva and the cornea; and the oculist is quite often consulted concerning such affections.

This book has 1,303 pages and is lavishly illustrated with 1,147 pictures, practically all of them photographs of patients and lesions of the skin. This being the sixth edition the author has endeavored to get rid of much of the old matter that has become obsolete. He acknowledges that the therapeutic advances have not kept pace with the information gained along other lines; and that the literature has become so voluminous that only an encyclopedia could begin to do it justice. This volume brings the consideration of the special subject much closer to general medicine than in previous years. It is here shown that many of the so-

called skin diseases are but local manifestations of general disease, and consequently to be treated accordingly.

H. V. W.

Symbioticism and the Origin of Species. Ivan E. Wallin, Sc.D. Professor of Anatomy, University of Colorado. Cloth, 8vo., 182 pages, 4 plates. Baltimore: Williamson and Wilkins Co., 1927.

Other branches of science which impinge on medicine, furnish a wide circle of reading; in which one, who is chiefly interested in medicine may find information and suggestions that bear upon the problems he has to deal with. Several departments of biology are drawn upon in this book, that have made rapid progress in late years; and offer much of interest, even to the physician who confines his practice to ophthalmology.

Professor Wallin became interested in the granules found in the cells of almost all multicellular plants and animals, at first called "bioblasts," but later "mitochondria." Wallin believes these are bacteria. They resemble bacteria in physical qualities, in chemical reactions, in staining properties and responses to heat, in method of reproduction and in ability to live, grow and multiply outside of the cells in which they are commonly found.

The power of one organism to associate with another, in a partnership that is mutually helpful, is called symbiosis. An organism that does this is called a symbiont. The powers of so living, Dr. Wallin calls "symbioticism." Such association has been best studied in the plants called lichens, each of which is an association of a multicellular fungus with algae. Where one organism is microscopic the association is called "micro-symbiosis."

The mitochondria are known to exist in egg cells and spermatozoa; and to divide in them, and thus become part of the new organism. They have been supposed to be a part of the mechanism of heredity and cell development. The symbiosis of mitochondria with an animal cell probably

greatly influences the life of the cell; and thus may affect hereditary characters and thru them the origin of species. Symbiosis may in the same way influence immunity and disease, introducing a new factor in etiology, pathogenesis and natural resistance. A mitochondrial factor might be common to both congenital and acquired malignant disease, linking retinoblastoma and hypernephroma of infancy, with sarcoma and carcinoma of later life.

The relations of light producing bacteria to luminiferous plants and animals, is dealt with at length in a chapter on microsymbiosis. Of the most striking luminiferous organ, found in some cephalopods, Wallin writes: "Here is an example of an organ, in which the whole of its complicated structure is essentially a response to bacterial influence, and the entire structure apparently is designed to utilize symbiotic bacteria."

The organ thus referred to bears some resemblance to a primitive eye. It has at the back a tapetum, in front of that a concave reflector, before which is the glandlike structure containing the luminiferous bacteria, and still more superficial a lens, covered by a transparent epithelium. Does such an animal utilize light to attract food, or as a weapon against enemies?

This monograph is not the report of new investigations in bacteriology; but rather a philosophy of mitochondria and their relations to the cells in which they are found. The ophthalmologist can turn to it for an interfusion of a new train of thought,

such as is needed to keep one's own thinking most productive.

E. J.

CORRESPONDENCE.

Fractures of the Orbit.

To the Editor:

It has been my lot to have quite a number of fractures of the orbit to attend. Considering the following facts it makes it my duty to offer to report these fractures.

The especial reason for reporting these fractures is that, as stated by Prof. Ball "fractures of the orbit are so frequently not diagnosed." As intern in an ophthalmic hospital fracture of the orbit was very rare. The reason for this likely is that they are not diagnosed by the general surgeon and so go over the time that the x-ray would show the fracture. The eye men can avoid many atrophies of the optic nerve by stating to the general surgeon that all patients receiving severe blows on the temporal bone or orbital rim should have an ophthalmoscopic and x-ray examination within the shortest time practical after the injury. Collapsed fundus artery may be seen. This occurred in some of my patients. Automobile accidents are frequent causes of strangulation of the optic artery. This strangulation is best described as stated by Prof. Ball. Leeches on the temple act in a remarkable way to relieve the optic foramen strangulation of the optic artery, when used early.

JOHN W. DEAN.

Glens Falls, N. Y.

BIOGRAPHIC NOTICES.

William M. Sweet.

HOWARD F. HANSELL, M.D.

PHILADELPHIA.

Dr. William M. Sweet was born June 24th, 1860. He died December 24th, 1926, of pneumonia, after a week's illness. It has been suggested

difficult, if not painful, for in reviewing his life I become vividly conscious that our happy personal and professional experiences will never be repeated; and just as in the case of the death of a dear relative time must pass before memory will become blunted and the realization that he has passed and will not return.



WILLIAM MERRICK SWEET.

1860-1927.

by our Chairman that we dedicate a few minutes of our time at this meeting to his memory.

The Chairman has chosen me to represent you in recalling the presence and activities of our friend and distinguished colleague, because of my close association with him for more than a generation. The situation is

I am quite sure that my sentiments and feelings differ in no degree or kind from those of the other members of this Section who have been his friends for an equally long time. It is fitting that we should halt every now and then in our engrossing professional work and direct our thoughts to the impermanency of life and con-

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sider how we can become wiser and more useful and more kindly to our fellow creatures.

Dr. Sweet's deep interest and active participation in the purposes of this Section furnishes us with an example and model that we would do well to imitate. He became a Fellow of this College in 1898, and a member of the Section of Ophthalmology almost from that time. For several years he was its efficient Clerk, and then its Chairman. Thruout this time, as is known to you as well as to me, he has read papers of great value and entered into discussions only when he felt he could add to their value. He is so well known to you that a history of his career and comment on his achievements in medicine seems unnecessary yet it is becoming that we, friends of a life time, witnesses of his accomplishments and coworkers in his hospital and college activities, should officially do him honor, who so highly honored the profession of medicine.

The choice of his calling was made while yet a young man, not much more than a boy, and the accomplishment of his purpose was beset with many, but not to him unsurmountable, obstacles. His schooldays were ended while still young, and he was compelled by circumstances to help fill the family purse. By study and application he made himself familiar with the intricacies of the iron and steel trade, and during his student days contributed noteworthy articles to journals devoted to that subject, and worthwhile editorials to the Philadelphia Record.

Handicapped financially, but with fixed purpose, he became a student in the Jefferson Medical College and graduated in 1886. He then served as interne in the Jefferson Hospital and completed the full term of two years. He lost no opportunity to learn from his distinguished chiefs S. W. Gross, Barthalow, Da Costa, Brinton. His power of observation was acute; his memory, cultivated assiduously, retentive; his ability to separate the chaff from the wheat, to recognize the

worthy and ignore the unworthy, continued unabated thruout his professional life.

His early practice was meagre, like that of most of us, and, during the lean year or so following the completion of his term as interne, he supplemented his limited income by contributions of scientific articles to the trade journals. He became attached to the Eye Department of the Jefferson Hospital and, by his industry and ability, arose from the humblest to the highest position. From clerk to assistant, then Chief of Clinic, Associate, Clinical Professor and, finally, and alas, for only one and one-half years, full Professor.

His interests were not limited to the Jefferson. As one of the Surgeons to the Wills Eye Hospital, his energy, operative skill, his long experience, his intelligent analysis of the symptoms and signs of disease made him peculiarly valuable as a consultant; also, after serving in various capacities in the Eye Clinic of the Polyclinic Hospital, he was made Professor of Diseases of the Eye in that institution. The course of lectures was principally concerned with injuries of the eye and was highly instructive to the large audiences.

The meetings of the American Ophthalmological Society, of which he became a member in 1900, were a source of the greatest pleasure. He was regular in attendance, contributed many practical clinical papers, ably discussed the contributions of others, and enjoyed to the utmost the personal contact with his many friends in the Society. For ten years he served as Secretary and Treasurer, 1908-1918. For five years he was a Member of the Council, in 1920 was elected Vice President, and in 1921 President.

I gratefully insert a paragraph from a personal letter from our esteemed colleague, Dr. T. B. Holloway, who, from intimate association with Sweet, is well qualified to speak. He says, "I shall not go into anything relative to Sweet's fidelity, loyalty and faithfulness to every trust he carried for this

Society. He labored many hours for its welfare, in fact, I know of no other member, during my membership, who has contributed so much to the welfare of the Society as Sweet."

As all the world of ophthalmology knows, Dr. Sweet's main professional interest was in the diagnosis of the presence and the situation and the extraction by magnet of metallic substances in the eye. His localizer has been generally adopted and his magnet almost universally used, at least in America. The former in his hands determined with the greatest accuracy the exact situation of a foreign body, when it was dense enough to cast a shadow, and the latter, operating thru a scleral incision and without insertion of the magnet tip into the vitreous, was sufficiently powerful to attract even the smallest fragments of iron or steel.

It seems superfluous for me to speak to you of Dr. Sweet's character. Nothing that I could say would add to your admiration of, and esteem for, him as an ethical, upright, industrious and genial colleague.

The esteem in which he was held by Joseph Meller, of Vienna, whose work on Ocular Injuries, as edited by Sweet, passed thru two editions, is reflected in a letter just received in which he says in part, "With Dr. William M. Sweet I have lost one of my best friends. I am deeply mourning for his decease and I shall never forget him. R. I. P."

I would like to close these brief and incomplete remarks with the beautiful expression of condolence, admiration and sympathy written by Anatole France to the widow on the death of Björnson, the great Norwegian: "We feel that our hope for a better future is justified as long as there are men such as he who has upheld the cause of justice, and who was a firm believer in the advent of the day when labor will be extolled and poverty not be a shame and when man will enjoy in peace the fruit of his good works."

William R. Murray.

THOMAS H. SHASTID, M.D.

SUPERIOR, WIS.

One of the heaviest losses which western ophthalmology has suffered in a long time occurred thru the recent death of William R. Murray, of Minneapolis.

Dr. Murray was born at Marquette, Mich., April 6, 1869. He received the degree of Bachelor of Philosophy at the University of Michigan in 1892, and the Doctor in Medicine at Rush Medical College in 1897. He was interne for a time in the Illinois Eye, Ear, Nose and Throat Infirmary. The following year was spent in practice with Dr. Harry V. Wurdemann, at Milwaukee. In 1899 he studied the eye, ear, nose and throat at Philadelphia, in 1909 at Vienna, and in 1914 at London.

In 1902 he settled in Minneapolis, where, for a number of years, he was associated with Dr. Frank Todd. The following year he became connected with the medical school of the University of Minnesota, in which institution he taught regularly until his death. In 1919 he was made chief of the Eye, Ear, Nose and Throat Department. In 1921 he became a member of the Nicollet Clinic, of which institution he was, at his death, medical director.

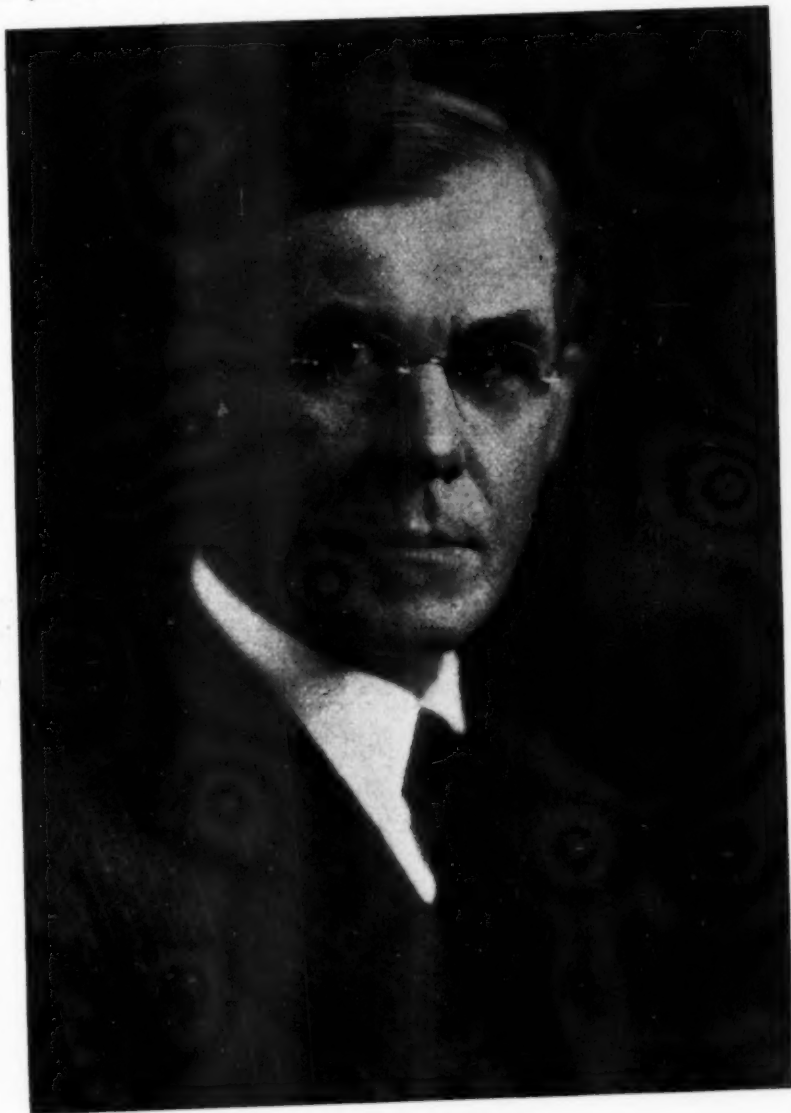
Dr. Murray was a member of the Minneapolis Academy of Medicine and of the Minnesota Academy of Ophthalmology and Oto-Laryngology, also of the American Academy of Ophthalmology and Oto-Laryngology, and of the American College of Surgeons. He was at one time President of the Minnesota Academy and at another time vice chairman and secretary of the section on his specialty in the American Medical Association. He was on the staff of the University and Abbott Hospitals.

Dr. Murray was a member of St. Mark's Episcopal Church, of the Minikahda Club and of the Minneapolis Club, and was a thirty-second degree Mason.

Dr. Murray died at the Abbott Hospital, Minneapolis, after an illness of eighteen days, on Dec. 27, 1926, aged fifty-seven years. The cause of death

was pus infection, which resulted from a very slight prick of a left hand finger while the Doctor was operating on a child's mastoid. The wound was promptly cauterized, but by the next morning, the entire left arm was affected and he was taken to the hos-

pital. A son, Gordon, aged 19, submitted twice to a transfusion of his blood, but these measures, together with amputation of the left arm, all



WILLIAM R. MURRAY.
1869-1927.

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pital. A son, Gordon, aged 19, submitted twice to a transfusion of his blood, but these measures, together with amputation of the left arm, all

failed to check the ravages of the deadly infection. The funeral services of Dr. Murray were conducted at his residence, 1775 Fremont Ave., South, by the Rev. S. Phillips Osgood, rector of St. Mark's Episcopal Church. The Doctor was

survived by his widow, two sons, Gordon and Julian, and a daughter, Mary, all of Minneapolis.

Concerning the Doctor's character one of his closest confreres writes: "William R. Murray was a man of reserve and dignity. He was honored and respected by his associates, and those who were privileged to know him well recognized in him a character of rare kindness and generosity. In his quiet, unassuming way, he has done more for the progress of medical education and for the fostering of medical ideals in his community than any one can ever know. All the honors and all the responsibilities which came to him in the course of his industrious career were proof of his real worth, for no one was ever more modest and less selfseeking than he."

The following tribute to Dr. Murray appeared as an editorial in "The Minneapolis Journal" for Dec. 30, 1926. It is here reproduced both because it relates to Dr. Murray and also because it is a fine and unusual appreciation of the medical profession in general:

MARTYRS OF MEDICINE.

"One who had saved a great many other lives, especially lives of children, gave up his own life to his profession in Minneapolis the other day. The martyr was Dr. William R. Murray, dead from a seemingly trivial scratch, infected while performing an operation.

"And Dr. Murray is only one of many practitioners who have made the supreme sacrifice, while striving to allay the sufferings of humanity. There have been other surgeons who succumbed to similar infections. Countless doctors have died of fevers acquired from those whom they were trying to cure. Others have freely submitted to inoculation with deadly disease germs, in the hope of hastening discovery of better modes of treatment. Others have kept on working with the X-ray, trying to heal others, knowing all along that they themselves were being slowly killed by the daily burns.

"And there have been thousands of those fine heroes, the country doctors, who have dared blizzards, breasted floods, waded into fever swamps, faced countless other dangers, to reach bed-sides of the ailing, frequently with no chance that their ministrations ever would be paid for.

"In time of plagues and great epidemics, when mortals have fallen over themselves fleeing from black death, cholera, yellow fever, the doctor has always stayed on, working harder than ever, and many a time has paid with his life.

"We wonder if the rest of us fully appreciate the risks the doctor runs, the chances the doctor takes, the fearlessness with which the doctor is ready to face death, that each of us may have a fuller share of health and happiness."

ABSTRACT DEPARTMENT

Reprints and journal articles to be abstracted should be sent to Dr. Lawrence T. Post, 520 Metropolitan Building, St. Louis, Mo. Only important papers will be used in this department, others of interest will be noticed in the Ophthalmic Year Book.

Groenouw, A. Sympathetic Choroiditis after Iridectomy. *Klin. M. f. Augenh.*, 1926, v. 76, p. 694.

After an iridectomy with small prolapse of the iris of the right eye of a woman, aged 43, for glaucoma, the eye showed constant irritation. Five weeks later the left eye became seriously affected, becoming progressively worse even after enucleation of the first eye. Vision declined to 1/60. Optic neuritis developed and a gray, round tumor like exudation appeared in the lower part of the choroid. It gradually disappeared leaving a whitish focus and at the periphery small white and black foci. Vision recovered to 1/3. The affection was considered as sympathetic.

C. Z.

Elschnig, H. H. A New Operation for Relapsing Pterygium. *Klin. M. f. Augenh.*, 1926, v. 76, p. 714.

After removing the pterygium the wound surface is curetted and the conjunctiva above and below detached along the lumbus. A symmetric flap with upper and lower peduncles is dissected from the limbus of the healthy side, slid over the cornea and fixed by sutures on the gap. The conjunctiva of the diseased side is drawn towards the cornea and fixed on the transplanted flap by sutures. Elschnig had very good success with the operation.

C. Z.

Zeeman, W. P. C., and Brouwer, B. Projection of the Retina in the Primary Optic Neuron in Monkeys. *Brain*, 1926, v. 49.

The authors have published in previous articles that there is a very distinct localization of the different parts of the retina of rabbits in the external geniculate body and in the midbrain. The cells of the lower quadrant of the retina send their fibres to the dorsal part of the crossed external geniculate body, while those from the upper quad-

rants reach its ventral part. There is a similar arrangement on the uncrossed side. Further, the nasal part of the retina is always projected laterally to the temporal half.

In cats, similar conditions exist. Here the number of noncrossing fibres is much greater than in rabbits; hence the binocular part of the external geniculate body has become bigger. Authors agree with Minkowski that in cats this binocular part is found chiefly in the medial section of the ganglion. They further found that the upper quadrants of the retina lie a little more frontal than the lower.

Sixteen monkeys were operated upon. Always the left eye was taken. In one case the left eye was totally extirpated. The other cases were divided in three groups. In the first, different parts of the retina were injured without damaging the macula; in the second group, the macula was involved, the remaining part of the retina being spared, while in the third, lesions were made in the macula as well as in the periphery. After 18 days the animal was killed. In all lesions of the macula and in several of the peripheral retina, a microscopic examination in serial sections was made. The nervous system was treated by the Marchi method. A complete series was cut thru the chiasma, the optic tracts and the primary optic stations. In several cases the peripheral nerve was also examined by this method. In the optic nerve, to a certain degree, a localization of the peripheral quadrants of the retina is found. The fibres from the upper half of the retina are situated above those from the lower; further, the temporal fibres lie lateral and the nasal medial. The number of macular fibres is large. Near the eye they are situated laterally in the optic nerve, but towards the chiasma the degenerated area has a tendency to pass

more centrally into the nerve; it increases in size in the neighborhood of the chiasma. Authors believe that the macular fibres separate those from the temporal, upper and lower quadrants of the peripheral retina from one another. There is not very exact localization of the macular fibres in the optic nerve, for it is certain that several of them are found between fibres from the various quadrants of the retina. This is especially so in the neighborhood of the chiasma. It seems probable that the fibres from the upper half of the macula lie above those from the lower. The fibres from the upper part of the retina generally cross dorsally in the chiasma, and those from the lower half ventrally. Immediately before the formation of the optic tract, however, the fibres from the dorsal quadrants reach the ventral half of the chiasma. The fibres from the upper nasal quadrants cross somewhat later than do those from the lower quadrants. In the most peripheral part of the chiasma the uncrossed macular fibres are seen thruout the whole lateral portion of the chiasma, while the crossing fibres have a tendency to avoid the dorsal and ventral borders. We may say that the macular fibres cross chiefly in the middle of the chiasma. The fibres from the lower half decussate somewhat earlier than those from the upper half. The macular fibres have a tendency to move towards the dorso-lateral part of the chiasma which fact determines their position in the optic tracts. There is a localization of the fibres from the upper and lower parts of the periphery of the retina. The projection is approximately the same in both the crossed and uncrossed tracts. The macular fibres are situated in the center and gradually become larger in a lateral direction. The medio-ventral portion of the macular fibres overlaps the fibres from the dorsal and ventral parts of the peripheral retina. In none of the series were degenerated fibres terminating in the pulvinar seen. All the secondary degenerations seen in the sections end in the corpus geniculatum externum and in the corpus quadrigeminum anticum.

In monkeys the retina is also projected in this part of the midbrain, but the bundles connected therewith are very small, especially on the uncrossed side. Secondary degenerations to the corpus quadrigeminum anticum were absent in most of their cases; in three cases only, of partial lesions of the retina, could a bundle of degenerated fibres be followed right up to its termination here. The course and ending of these bundles differed from one another, suggesting that also in monkeys there is a localization of the different parts of the retina in the cortex of the colliculus anterior. These secondary degenerations were constantly absent after macular lesions. If the fibres for reflex movements of the pupil take origin in the macula they cannot be myelinated. The upper half of the retina is projected medially, the lower laterally in the corpus geniculatum externum. The fibres from these two do not overlap. Secondary degenerations due to differently situated lesions in the same quadrants resemble each other very much. The crossed and uncrossed fibres must lie close to one another. The macular fibres are widely spread thruout the corpus geniculatum externum. They are chiefly found in the center. This indicates a localization, but it does not hold, however, in the oral part of the ganglion. The fibres from the macula seem to be mixed here with those from the peripheral parts of the retina. The upper half of the macula is represented in the immediate neighborhood of the upper part of the periphery, and the lower portion of the macula adjacent to the lower sector of the periphery. It is only in the more oral sections of the external geniculate body that this sharp localization is not found. It should not be forgotten that a large part of the optic tract passes thru the oral part of the ganglion and many of these fibres penetrate this portion of the ganglion on their way to more central parts. In the diagram of the projection of the retina in the external geniculate body the macula is projected between the upper and lower halves of the periphery. The upper quadrant of the macula borders on the

upper part of the peripheral retina, and the lower part of the macula on the lower periphery. The monocular field of vision is represented in the periphery. The horizontal meridian of the retina remains vertical, but somewhat oblique, in the corpus geniculatum externum.

E. E. B.

Bohnenberger, F. A. Double Refraction. *Klin. M. f. Augenh.*, 1926, v. 76, p. 690, ill.

A boy, aged 12, had vision of 6/20. Thru concave lenses vision was at first blurred, then improved to 6/15 with -14. sph. With a +3. sph. he also had vision of 6/15. He reads fine print at 8 cm. without and with + 15. sph. Focal illumination revealed several maculae corneae. In the center the refraction was different from the myopic marginal parts of the cornea. The slit lamp showed slight applanation of the anterior surface, intense cicatricial opacity of the anterior lamellae and considerable bulging of the posterior surface; a small concave lens of the form of a meniscus in the center of the large meniscus of the cornea. By placing a contact glass on the cornea the applanation was eliminated with subsequent elimination of the hyperopic refraction of the eye which now was essentially like a myopic eye. A scrofulous ulcer apparently was the cause of the scar. The optic conditions are discussed.

C. Z.

Bartok, E. Hereditary Ptosis. *Klin. M. f. Augenh.*, 1926, v. 76, p. 496.

A woman, aged 57, her daughter, aged 35, and the son of this daughter, aged 9, showed ptosis of the right lower lid, i.e., in looking straight forward the margin of the right lower lid was 4 mm. from the lower corneal limbus while the left touched the limbus. In all three the function of the facial nerves was preserved. In quiet closure of the lids the eyeball was completely covered. The anomaly was not congenital but developed in the first four years after birth. The author thinks that the most probable

cause was a partial paresis of certain branches of the facial nerve.

C. Z.

Hübner, O. Causes of Blindness in Germany. *Zeit. für Augenh.*, 1926, Band 58, p. 358.

Of the 2757 blind persons in the German Institutions for the Blind between 1919 and 1924, 1425 were adults and 1332 were children; 25% were totally blind from birth. Blennorrhoea neonatorum was the cause of blindness in 4.72%, trachoma in 0.11%, myopia in 1.34%, glaucoma in 4.75%. Diseases of the optic nerve, choroid and retina caused 20.71% of the blindness, trauma, 9.47%; scrofula, 2.83%, brain disorders, 2.94%; syphilis, 3.77%; tuberculosis, 0.94%; lens changes, 8.92%, and 6.96% were blinded in the war.

H. G. L.

Engelking, E. Orbital Infection from Conjunctivitis. *Klin. M. f. Augenh.*, 1926, v. 76, p. 56, ill.

A boy, aged 11, came with swelling of the lids, chemosis and slight exophthalmus of right eye. The upper fornix presented a pseudomembranous staphylococcus aureus conjunctivitis which led to phlegmon and abscesses under the conjunctiva and purulent thrombophlebitis of the orbit. The pupil was enlarged and sluggish, and the ophthalmoscope revealed optic neuritis. Soon the patient was somnolent and died on the third day under meningitic symptoms.

The autopsy disclosed thrombosis of the superior ophthalmic vein propagated to the right cavernous sinus, purulent external pachymeningitis of the right middle cranial fossa with transition to the pia of the right temporal lobe, purulent meningitis of the soft tunics and edema of the brain, general staphylococcus sepsis with embolic abscesses in the heart, both kidneys and lungs. The inflammatory process of the conjunctiva was without doubt the starting point of the disease.

The second case, a woman, aged 68, noticed for five months double images while a painless tumor developed in the right orbit. This was palpable be-

low the eyeball to which it was adherent and behind the lower eyelid. Exenteration of the orbit with plastic closure was done. The microscopic examination revealed a tuberculoma of the orbit. It consisted of epithelioid cell tubercles surrounded by lymphocytic cells. Infiltrations in the perivascular lymph spaces and the orbital tissue clefts extended to the optic nerve.

The process was apparently due to an infection of the conjunctival sac from outside and one must assume that the tubercle bacilli permeated the conjunctiva without serious lesion of the epithelium and settled in the lymph adenoid tissue of the retroretinal fold.

C. Z.

Moore, R. Foster. Air Bubbles in Vitreous. *Brit. Jour. Ophth.*, 1926, August, v. 10, pp. 418-419.

In this case report the air bubbles were observed immediately following an injury due to a foreign body in the vitreous. Such a condition must be looked for within a few hours, the foreign body must pass directly into the vitreous; the bubbles are multiple. One illustration accompanies the report.

D. F. H.

Meyer, Herman. Nonmyopic Senile Conus. *Archiv. f. Ophthalmol.*, 1926, Band 116, p. 553.

Among 304 nonmyopic eyes of individuals from 50 to 101 years old, 67 eyes in 35 persons showed a juxta-papillary choroidal atrophy. In control observations of 200 eyes of individuals 15 to 25 years old, this conus was not found once. It is, therefore, probable that the conus formation is dependent upon age since it appears more frequently as age advances. The conus dependent upon the oblique entering of the optic nerve and the conus produced by circum- and juxta-papillary choroidal atrophy must be considered as two entirely different changes. The former remains stationary after the cessation of growth, that is at about 20 years of age. The latter is progressive and therefore belongs in the group of senile

and presenile changes. In axial myopic eyes the conus formation often attains a higher intensity but on the other hand can be entirely absent, so that the conus is not so much due to the stretching as to increasing age.

H. G. L.

Stock, W. Metastatic Ophthalmia by Mould Fungi. *Klin. M. f. Augenh.*, 1926, Jan., v. 76, p. 49, ill.

The author gives the clinical history of metastatic ophthalmia in a man, aged 32, in whom after enucleation an invasion of the vitreous with mould fungi was ascertained. Cultures from the sputum grew *aspergillus fumigatus*. As the fungus in the vitreous could very well be *aspergillus fumigatus*, Stock could readily assume that the patient had bronchiectasia with infection by *aspergillus* and that from here the fungus was conveyed metastatically into the vitreous.

C. Z.

Wajid Ali Khan. Pathogenesis of Microphthalmia. *Brit. J. of Ophth.*, 1926, Dec., v. 10, p. 625.

The author describes in great detail four cases of microphthalmia, two from children and two from a pig (7 illustrations); complete microscopic descriptions accompanying the contribution. The first case illustrates the lowest type. Appearances due to invagination and presence of pigmentation suggest invagination of the primary optic vessel. The second case illustrates a typical microphthalmia associated with an orbital retinal cyst. The third, from a pig, had a dermoid of the cornea, while the fourth, also from the same pig, showed a coloboma of the choroid and ectasia of the sclerotic. The four cases of microphthalmia represent different stages at which arrest of development has taken place. In all these cases, aberrant development was present. There are two main hypotheses to explain this abnormality; one, intrauterine inflammation, the other an arrest of normal development. Any deleterious agents might be expected to act injuriously on delicate fetal structures. A bibli-

ography of twenty references is appended.

D. F. H.

Stein, R. Zonula Lamella. Klin. M. f. Augenh., 1926, Jan. v. 76, p. 75, ill.

The author describes a case, in a man, aged 56, of bilateral dislocation of the lens downwards. With the slit lamp the elongated zonula fibers were seen behind the plane of the iris, as groups of bundles, which lay on the border of the vitreous and fluctuated with its movements. They terminated in a fine glassy membrane. The case showed that occasionally dislocation of the lens is caused by detachment of the zonula lamella.

C. Z.

Morax. Infection of the Lens. Acad. de Méd., 1927, Jan. 11, Abst. Gaz. des Hôp., 1927, v. 100, p. 73.

This occurs only when a piece of stone or iron has entered the lens. The etiologic agent is some spore bearing bacteria such as the *B. subtilis*. When this is injected into the anterior chamber, it has no pathologic action, but has when injected directly into the lens.

C. L.

Dodds, L. G. Congenital Muscular Squint. Brit. J. Ophth., 1926, Dec., v. 10, p. 649.

This contribution discusses a peculiar kind of squint. It is not concomitant and has the characteristic signs of abduction of one or both eyes being abolished. Adduction may or may not be impaired. There is a retraction of the eyeball into the orbit and a closing of the palpebral fissure which is increased by adduction. Lagleyze, Bietti, Duane and Adroque have observed cases.

The author reports a case in a boy, aged 16, with a left convergent strabismus of 15°.

Looking to the left, there was no excursion beyond the median line. Beyond this line diplopia was produced. The palpebral fissure was narrowed and there was a slight enophthalmos. Active movement outwards was 0; inwards, 10°; passive, i. e., by the use of forceps, out, 5°, in, 10°. Tenotomy showed the insertion normal, but traction on the muscle revealed a thick inextensible cord. Cosmetically the result was good, retraction of the eyeball disappeared, but lateral movement of the eyeball was unchanged. The pathogenesis of the condition is unknown. Histologic changes in the muscle have been noted, also thinning of the sclerotic.

D. F. H.

Cange, A. Monocular Trachoma. Gaz. des Hôp., 1927, v. 100, pp. 5-10.

Altho trachoma is usually bilateral when the physician first sees the patient, it is possible to have the infection in one eye subsequent to that of the other, or even be absent altogether during the progress of the case. The delay may be as long as 10 years. There are several hypotheses to account for this delay or absence: (1) Refraction—the eye affected has an error of refraction not possessed by the other; (2) changes in the lacrimal passageway—obstruction causes stagnation of tears which favors the development of the disease on the side affected; (3) antecedent inflammation on the affected side; (4) attenuation of virus; (5) decrease of susceptibility; (6) noninfection as the result of treatment and prophylaxis; (7) unilateral trauma. Several other diseases which are unilateral and which produce a granular condition of the conjunctiva are mentioned, and the necessity for differential diagnosis is stressed.

C. L.

NEWS ITEMS

Personals and items of interest should be sent to Dr. Melville Black, 424 Metropolitan Building, Denver, Colorado. They should be sent in by the 25th of the month. The following gentlemen have consented to supply news from their respective sections: Dr. H. Alexander Brown, San Francisco; Dr. Wm. Thornwall Davis, Washington; Dr. Gaylord C. Hall, Louisville, Ky.; Dr. J. W. Kimberlin, Kansas City, Mo.; Dr. George H. Kress, Los Angeles; Dr. Edward D. LeCompte, Salt Lake City; Dr. W. H. Lowell, Boston; Dr. G. Oram Ring, Philadelphia; Dr. Charles P. Small, Chicago; Dr. G. McD. VanPoole, Honolulu.

DEATHS.

Dr. David E. Welch of Grand Rapids, Michigan, died December eighteenth, 1926, aged sixty-eight.

Dr. E. Mickell Whaley of Little Edisto, South Carolina, died December twenty-seventh, 1926, aged fifty-five.

Dr. Frank Lee Barrows, of Reno, Nevada, aged forty-eight, died December twenty-sixth, 1926, in Portland, Oregon, of carcinoma.

Dr. William R. Murray of Minneapolis, whose death has been previously noted in these columns, received an infection from a prick on his thumb while operating. In spite of amputation of the arm the spread of the infection could not be arrested. The faculty of the medical school in which he held the chair of ophthalmology adopted a memorial from which the following is an extract: "There are few friends so genuine, so constant, so simply friends,—there are few men in medicine so faithfully, so modestly, so uniformly efficient; there are few teachers so direct, so staid, so sound, as was William Robbins Murray, whose death his friends, his colleagues and his students mourn today. He was one of those rare

"Souls, without reproach or blot,
Who do His will and know it not."

Dr. Francis Lane of Chicago, died February seventeenth, aged 52 years. Dr. Lane was a graduate of Princeton College. During his student days he was noted for his general athletic ability, and in 1896 was one of the first Americans to be sent to Athens to participate in the Olympian contests. He received his medical education at Washington University. For many years he has been regarded as one of our leading ophthalmologists, and had recently been appointed as Head of the Department of Ophthalmology in the University of Chicago Medical Department. He was Ophthalmologist for the Illinois Central railroad, and for the Western Electric Company. For many years he had been Pathologist at the Illinois Charitable Eye and Ear Infirmary. In 1922 he was President of the Chicago Ophthalmological Society. A victim of diabetes, it was thought about ten years ago that he had but a short time to live. Insulin was discovered and Dr. Lane was the first person in Chicago to be given this treatment. From that time on, improvement in his condition was rapid and constant. He declared he was absolutely convinced that insulin had saved his life. He was apparently in his usual condition until about ten days before the sudden onset of the attack which terminated fatally.

SOCIETIES.

The American Board for Ophthalmic Examinations will hold its next examination at Washington, D. C., May sixteenth, at nine o'clock, in the Episcopal Eye, Ear and Throat Hospital. This same board will hold examinations again at Spokane, Washington, Saturday, June fourth, at nine o'clock. The American Board of Oto-Laryngology will meet at the same time and same place.

The February meeting of the Chicago Ophthalmological Society, which was a joint meeting with the Chicago Medical Society, had the following interesting program: 1. Lantern Slide Exhibition of Photographs of the Fundus: (a) Variations in normal fundi; (b) Pathologic fundi and their relationships to general diseases; by Robert von der Heydt. 2. The Eye in Brain Localization, by Frank Brawley. 3. Lantern Slide Exhibition of External Eye Diseases of Interest to the General Practitioner, by E. R. Crossley.

The regular meeting of the Ophthalmological and Oto-Laryngological Section of the Cleveland Academy of Medicine was held at Hotel Winton, Friday evening, January twenty-eighth, 1927. Following the installation of Drs. W. J. Abbott, Chairman, and A. L. Stotter, Secretary, the program of the evening was presented. Those participating were Drs. W. E. Bruner, O. M. Shirey, and S. H. Large. Dr. Bruner gave an informal talk on "Some Practical Points in the Use of Bifocal and Trifocal Lenses."

At the annual meeting of the Chicago Ophthalmological Society, held on January seventeenth, the following officers were elected for the ensuing year: President, Robert H. Buck; Vice-President, Oscar Cleff; Secretary-Treasurer, Charles G. Darling; Councilor, F. G. Vreeland; Corresponding Secretary, Clarence Loeb. The guest of the evening was Dr. William H. Wilmer, who told of the progress being made in the newly established William Holland Wilmer Ophthalmic Foundation of Johns Hopkins University. Dr. Wilmer was elected an Honorary member of the Society.

At the meeting of the Section on Ophthalmology of the College of Physicians of Philadelphia, on the evening of February seventeenth, the following program was given: Dr. Howard F. Hansell, "A Memoir of Dr. William M. Sweet"; Dr. Harry A. Goalwin, of New York (by invitation), "Normal and Pathologic Anatomy of the Optic Canal in the Roentgenogram"; Discussion by Drs. H. W.

Pancoast, George E. Pfahler, and David R. Bowen. Dr. J. Milton Griscom, "Essential Atrophy of the Iris, with the Report of a Case." Dr. H. Maxwell Langdon, "Ring Scotoma in Glaucoma, with Report of a Case." Dr. Luther C. Peter, "Notes on a Case of Linear Precipitates on the Posterior Surface of the Cornea." Dr. Sidney L. Olsho (by invitation), "A Case of Congenital Coloboma of the Iris."

The Twelfth Annual Conference of the National Committee for the Prevention of Blindness, took place December first and second, and was attended by a large number of ophthalmologists, among whom were Dr. F. Park Lewis of Buffalo, First Vice-President; Dr. J. A. Stucky, Lexington, Kentucky; Dr. Conrad Berens, New York City; Dr. B. Franklin Royer, Medical Director of the National Committee, acting as Chairman; and Dr. William Campbell Posey, of Philadelphia. The work being done by this Committee is much needed and is bringing results. It is pleasing to see that the ophthalmologists of this country are contributing to its activities.

The Pacific Coast Oto-Ophthalmological Society holds its annual meeting this year at Spokane, June fifth to eighth. All applicants for membership must now be accredited either by the American Board of Ophthalmic Examinations, or the American Board of Oto-Laryngology. There will be a golf match, examinations by the Boards, and then the scientific meeting. After the meeting outings can be taken in Yellowstone or Glacier National Parks, the Canadian Rockies, Puget Sound and Mount Rainier, or excursion trips to Alaska. Those planning Alaskan trips should make their reservations now, thru the Secretary, Dr. W. F. Hoffman, of Seattle.

INTERNATIONAL OPHTHALMOLOGIC CONFERENCE.

Early in October, the small committee nominated by Mr. E. Treacher Collins, in virtue of a resolution passed at the general meeting of English-Speaking Ophthalmologists in July, 1925, sent out a general notice to Ophthalmological Societies and Ophthalmologists in all parts of the world, asking them to nominate two delegates from each country to confer on the question of the reestablishment of International Congresses and on other matters of International Ophthalmological interest. The response to that notice has been widespread and already 22 including almost all the principal countries of the world have indicated their approval of the project and 19 of them have already named their 38 delegates. The arrangements which have been provisionally made are for the Committee to meet at The Hague on Tuesday the 12th of July on the invitation of the Netherlands Ophthalmological Society. Mr. E. Treacher Collins will attend as Convener of the Conference.

GRADUATE COURSES.

The fourth special course for postgraduate study in ophthalmology will be given at Vienna, October first to December sixth, 1927, under the auspices of the American Medical Association of Vienna, at the I and II Eye

Clinics of the Allgemeines Krankenhaus. Prof. E. Fuchs is kind enough to participate in the program. Prof. Meller, Chief of the I Eye Clinic, has again consented to take an active part. The other lectures will be given by Prof. Lauber, Prof. Lindner, the Docents A. Fuchs, Bachstetz and Guist, and Assistants Dr. Pillat, Dr. Safar, Dr. Urbanek and Dr. Nitsch. Professors, Docents and Assistants of other departments will deliver lectures on their respective subjects: Prof. Schüller on Roentgen Rays, Docent Hirsch on the Hypophysis and Sinuses; Docents Kofler on the Modified West Operation; Kumer on Radium Treatment, Fuhs on Skin Diseases in Connection with the Eye, and Assistant Sternberg on Embryology. The Course occupies a total of 331 hours. A preliminary knowledge of ophthalmology is pre-supposed.

Concerning operations and use of the slit lamp, only lectures and demonstrations will be given. There will be an opportunity, however, for small groups of men to do practical work in these fields, in both eye clinics at the current fees. In refraction only advanced work will be given. During the first three weeks of the course an opportunity will be given for beginners to take elementary refraction with one of the teachers, at the current fees. In ophthalmoscopy and practical microscopic work, as well as in skiascopy with cylinders, a second teacher will attend.

The entire Course is given in English, for a minimum of ten and a maximum of sixteen men. The fee is \$240 per man. Applications with a certified check of \$50 should be sent to Docent A. Fuchs, Vienna VIII Skodagasse 13. Applications are accepted in order of priority. Further information can be secured by writing to Dr. A. Fuchs, or to the American Medical Association, Vienna VIII Alserstrasse 9, Cafe Edison.

A Course on Ocular Biomicroscopy with the Slit Lamp will be given at the Ophthalmic Clinic of the University of Nancy, June 13-18, inclusive. This course will be directed by Dr. Jeandelize, Head of the Department of Ophthalmology and Dr. Koby of Bale, with the assistance of Drs. Lemoine of Nevers, Valois of Moulins and Drs. P. Bretagne and R. Baudot of Nancy. The number of students is limited to 24. The necessary apparatus for use in demonstrations is supplied by Gambs of Lyons and Zeiss of Jena. Further information can be obtained by writing to Dr. Jeandelize, 2 rue Poirel, Nancy.

The Sixth Intensive European Summer Course in Ophthalmology and Oto-Laryngology will be given in Vienna this summer. These courses will be separated into one complete course in ophthalmology and one complete course in oto-laryngology, and not combined as in previous years. The course in ophthalmology will be given at Vienna by Dr. Guist, Dr. Pillat and Prof. Lauber. The course covers the microscopic anatomy and pathology of the eye; ophthalmoscopy; clinical diagnosis of eye diseases, both external and internal; slit lamp and red free ophthalmoscopy; operations on pigs' eyes and a cada-

ver course on the eye muscles, with individual exercises for each one taking the course. The course lasts for 5 weeks, starting June 24th, 1927. Ten hours per day for 30 working days. All courses are given in the English language.

The first intensive European summer course in Neurology is given simultaneously with the courses in Ophthalmology and Oto-Laryngology. This like the other European courses is given in the English language. In addition there will be fifty hours of lectures given on the boat, going to and returning from Europe, by Dr. Mackenzie. For further particulars address Dr. George W. Mackenzie, 1724 Spruce St., Philadelphia, Pa.

The fifth Summer Graduate Course in Ophthalmology and Oto-Laryngology will be given in Denver, July 18-30, inclusive. Lectures will be given by Dr. Allen Greenwood of Boston on "Surgery of the Lacrimal Passages and Orbit"; by Dr. John M. Wheeler, New York City, on "Plastic Operations on the Eyeball and Lids"; and Dr. Walter I. Lillie, Rochester, Minn., on "Ocular and Visual Manifestations of Intracranial Disease." The daily demonstrations, one-half of which deal with ophthalmic subjects, will include: Histopathology of the Eye, the Crossed Cylinder. Testing of the Ocular Muscles, Study of the Fields of Vision, and General Examination of Eye Patients. The Round Table Luncheon Discussions will deal, on alternate days, with subjects of ophthalmic interest, proposed by members of the class. Two days will be occupied by the program of the Colorado Congress of Ophthalmology and Oto-Laryngology, which will be the thirteenth of such congresses devoted to ophthalmology.

The American Academy of Ophthalmology and Oto-Laryngology meets this year in Detroit, September 12-17, inclusive. In previous years the regular program of the Academy has occupied the earlier days, and what was called the Section on Graduate Instruction was arranged in the last three days of the week. This year a rearrangement of program is being worked out, that will bring the Graduate Instruction in closer relation with the papers

and discussions. The attempt is also being made to have such instruction given more thru demonstrations and luncheon discussions. It will probably be quite as interesting as the instruction course of years that have preceded this; but the details of its arrangement have not yet been announced.

PERSONALS.

Dr. A. B. Middleton of Pontiac, Illinois, is at his winter home in Florida.

Dr. R. B. Metz, of the Ophthalmic Division of the Lakeside Hospital, Cleveland, has gone to Florida. He is expected to return in ten days.

Dr. W. L. Fox, of Cleveland, went to New York City for Post Graduate Study in Ophthalmology at the New York Post Graduate Medical School.

Following the death of Dr. W. R. Murray, of Minneapolis, Dr. Frank Burch, of St. Paul, has been appointed head of the department of ophthalmology at the University of Minnesota.

Dr. L. Kacso, who was formerly associated with Professor Grosz at Budapest, Hungary, is now located at 736 Rose Building, Cleveland, where he is engaged in the practice of ophthalmology.

Major Edmund B. Spaeth, U. S. Army, announces his resignation from the Army Medical Corps, to enter private practice in association with Dr. Luther C. Peter, at 20th and Chestnut Sts., Philadelphia, Pa.

At the February meeting of the Section on Otology and Laryngology of the College of Physicians of Philadelphia, Dr. William H. Sears of Huntingdon, Pa., by invitation read a paper on "Otogenic Paralysis of the Extraocular Muscles and Gradenigo's Syndrome."

Dr. M. P. Motto, of the Ophthalmic Department of the Lakeside Hospital, recently returned to Cleveland, after having spent ten days in visiting the Ophthalmic Clinics of New York, Philadelphia, and Baltimore. Dr. Motto, while in Baltimore, visited the new Wilmer Ophthalmic Institute of the Johns Hopkins University.

Current Literature

These are the titles of papers bearing on ophthalmology. They are given in English, some modified to indicate more clearly their subjects. They are grouped under appropriate heads, and in each group arranged alphabetically, usually by the author's name in *heavy-faced type*. The abbreviations mean: (Ill.) illustrated; (Pl.) plates; (Col. Pl.) colored plates. Abst. shows it is an abstract of the original article. (Bibl.) means bibliography and (Dis.) discussion published with a paper.

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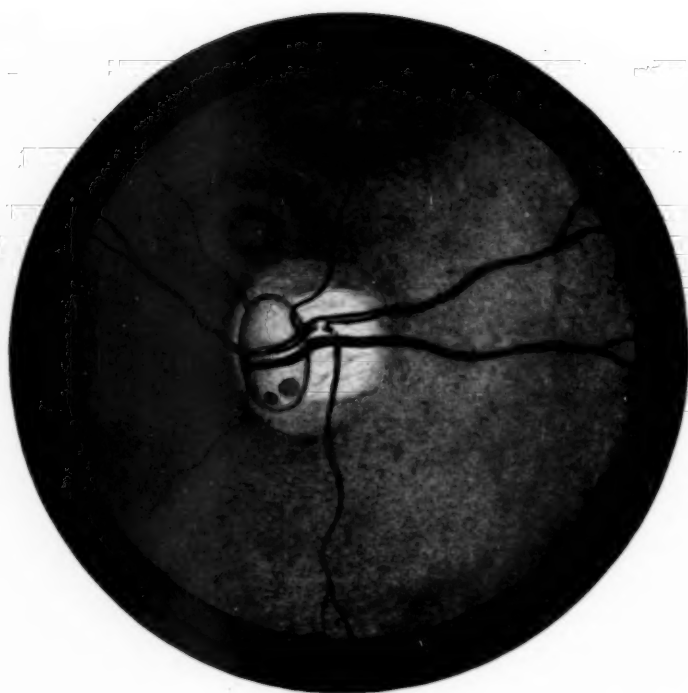
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